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FLEET OWNER

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CEMBER
1935

DEVOTED to the BETTE
OPERATION and MAINTENANC
of all AUTOMOTIVE FLEET

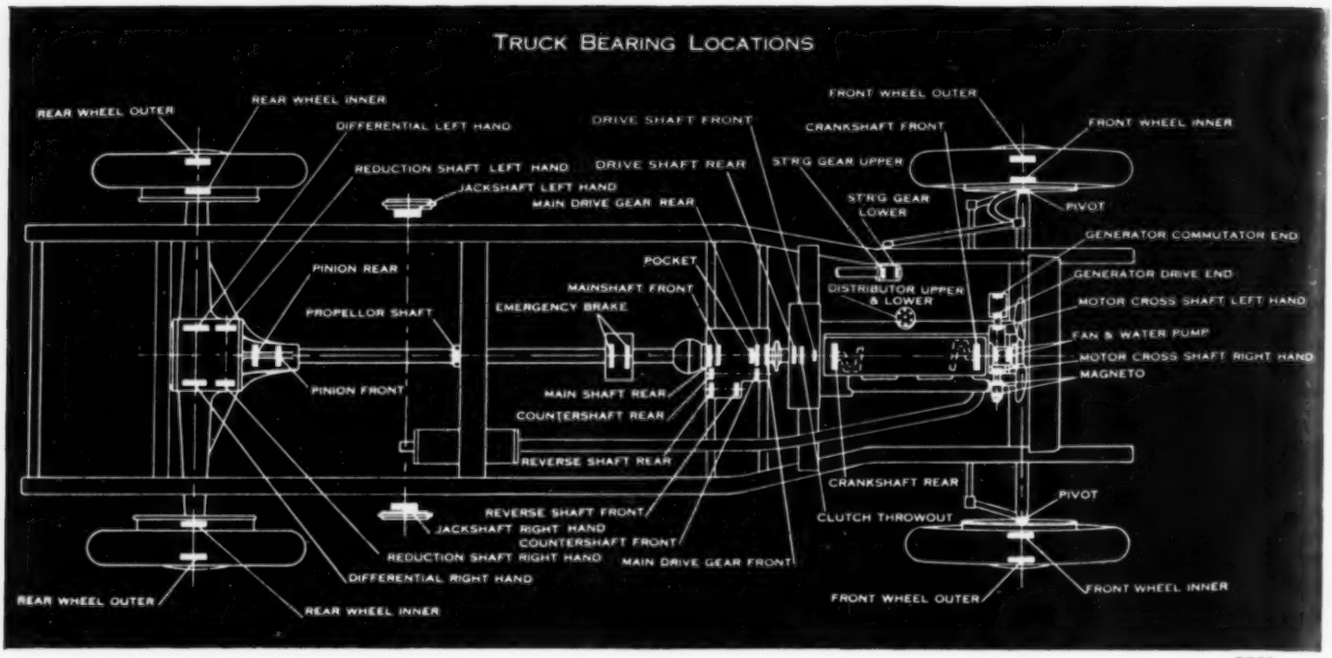
VOL. 15

SHOP EQUIPMENT AND TOOL NUMBER

No. 6

EATURES •

SHOP-EQUIPMENT PRIZE CONTEST LETTERS • SHOP EQUIPMENT ENCYCLOPEDIA • DIESEL PROGRESS TO DATE



3501

REPLACING WITH SKF MEANS PROFITS

TO FLEET OWNERS!

Bargain counter bearings that lay down on the job not only wear badly on rotating parts but poorly on *profits*. You find them in every shop's graveyard for worn-out bearings that were bought to give years of service . . . but didn't.

No one knows better than your skilled mechanic that true alignment saves excessive wear of gears, shafts and wheels—that does away with the replacement of items which in many cases cost more than the bearing.

Next time you buy bearings, specify SKF. The nation-wide system of service stocks maintained by SKF practically brings more than 1200 types and sizes of bearings to your shop doors. It permits you to standardize on SKF with the assurance that they are available *always*.

SKF
BALL & ROLLER BEARINGS

SKF INDUSTRIES, INC.
FRONT ST. & ERIE AVE., PHILA., PA.

HOW Firestone TIRES CUT OPERATING COSTS

WIDER, FLATTER TREAD WITH MORE RUBBER ON THE ROAD Gives Greater Mileage
TWO EXTRA LAYERS OF Gum-Dipped CORDS UNDER THE TREAD Locks it to Body
MOTOR TRANSPORTATION INC.
Gum-Dipped CORD BODY Prevents Internal Friction and Heat
TWIN BEADS WITH SAFETY-LOCKED PLIES FOR LONG Trouble Free Service

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F. T. & R. Co.

CERTAIN construction features must be built into tires to give you greatest safety and lowest cost per mile.

To make Firestone Tires blowout-proof, the cord body is built up of Gum-Dipped cords. To give you greatest non-skid safety and long mileage, the Firestone tread is scientifically designed, with a flatter contour and more rubber on the road. There are two extra layers of Gum-Dipped cords, to lock the rugged tread securely to the Gum-Dipped cord body.

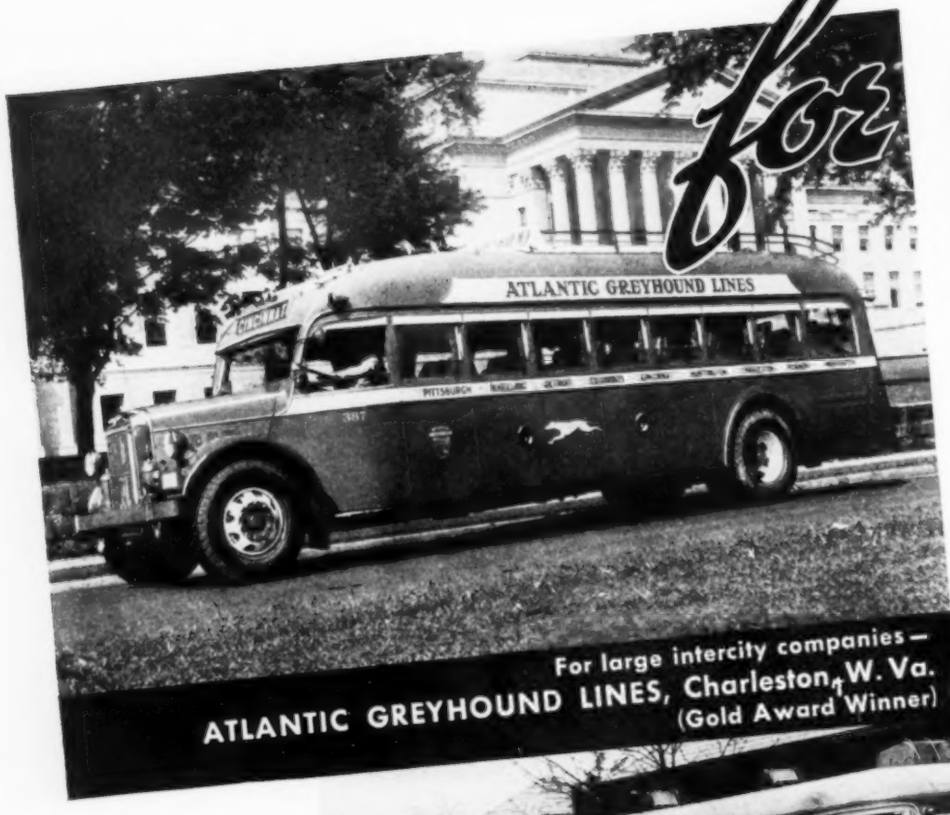
Firestone Truck Tires are the only tires made that give you all these exclusive advantages.

Equip your trucks with Firestone Tires and start cutting your operating cost today. The nearby Firestone Auto Supply and Service Store or Firestone Tire Dealer is ready to serve you.

Listen to the Voice of Firestone—featuring Richard Crooks, Nelson Eddy—with Margaret Speaks, Monday evenings over Nationwide N. B. C.—WEAF Network

WIN MAINTENANCE

for 6th



For large intercity companies—
ATLANTIC GREYHOUND LINES, Charleston, W. Va.
(Gold Award Winner)

For large city companies—
MOTOR TRANSIT COMPANY, Jacksonville, Fla.
(Silver Award Winner)

TEXACO
REG. T. M.

AWARDS

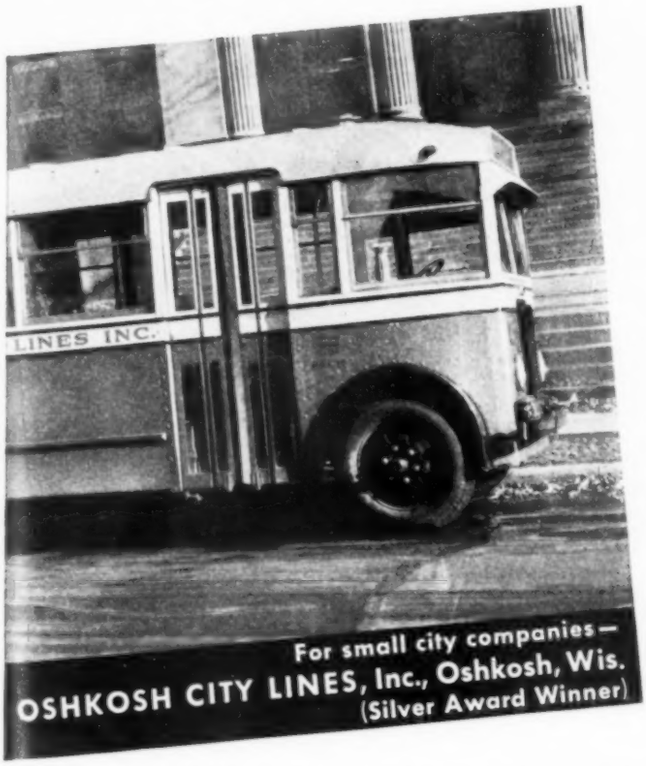
consecutive year!

When fleet owners . . using the same lubricants . . slash operating costs . . year after year . . that's *NEWS*

Each year, all over the country, alert fleet managers, service executives and mechanics are bending every effort to improve operating schedules while reducing costs.

They do this, not just to win a possible award in the annual "Bus Transportation Contest" but for their own dollars-and-cents benefit. Every year — six times straight — since this contest started, Awards in it have gone to users of Texaco Products.

And this year, Texaco users not only won the Gold Award, but two additional Silver Awards. Moreover, *every* Gold Award in this contest has gone to a Texaco user.



How well these passenger-carrying fleet operators rate Texaco is evidenced by the fact that *more bus-miles are operated with Texaco than with any other brand.*

Fleet operators, whether carrying people or products, have similar maintenance problems. You, too, can benefit from the proven economy gained by using Texaco Products in lowering your maintenance costs and improving the dependability of your equipment.

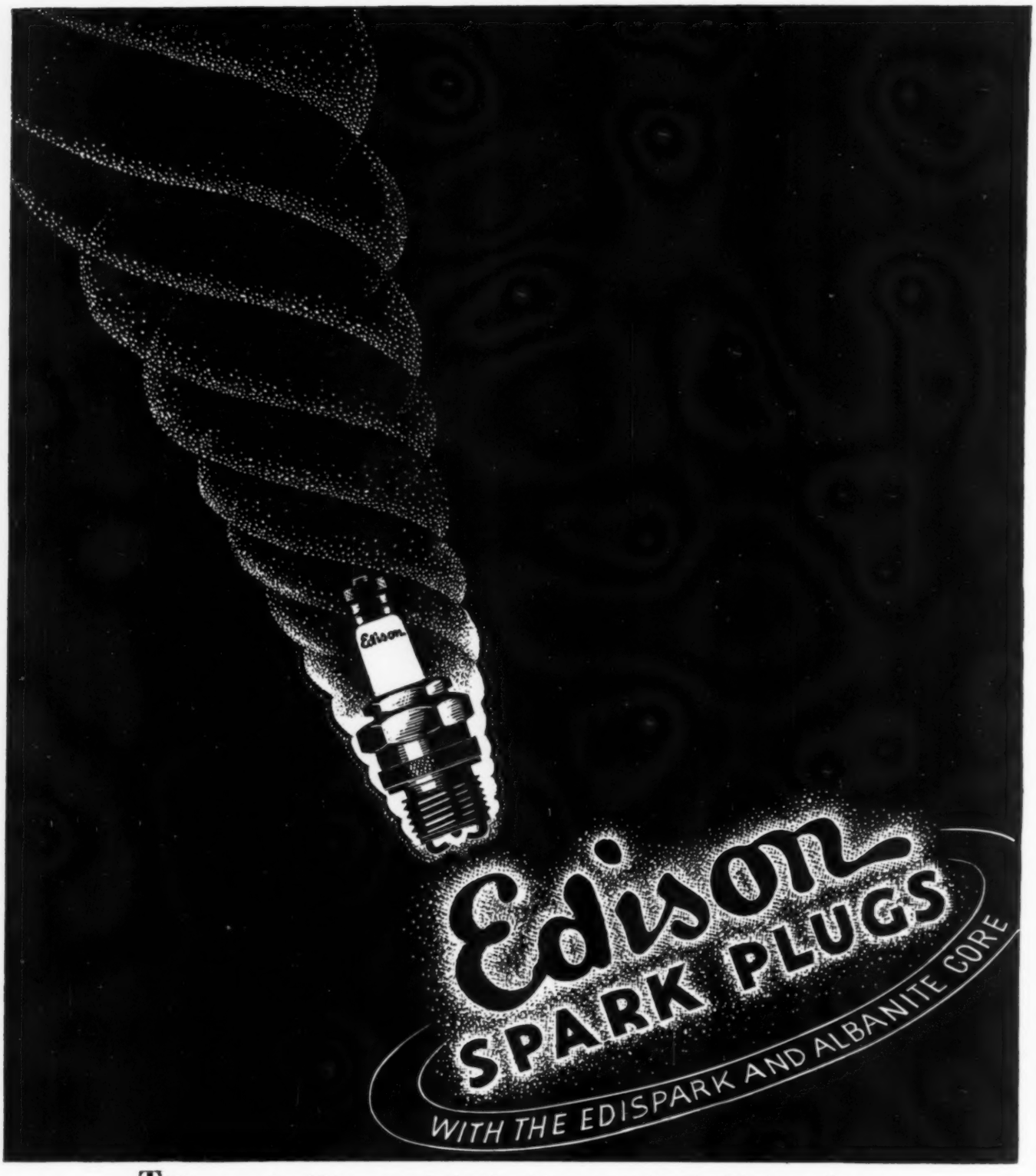
Texaco Products are backed by a technical service that cooperates with your men, analyzing the needs of each fleet operation in selecting the right lubricants for the crankcase, gears and bearings. Call in the Texaco representative.

THE TEXAS COMPANY

135 East 42nd Street · New York City

Nation-wide distribution facilities assure prompt delivery

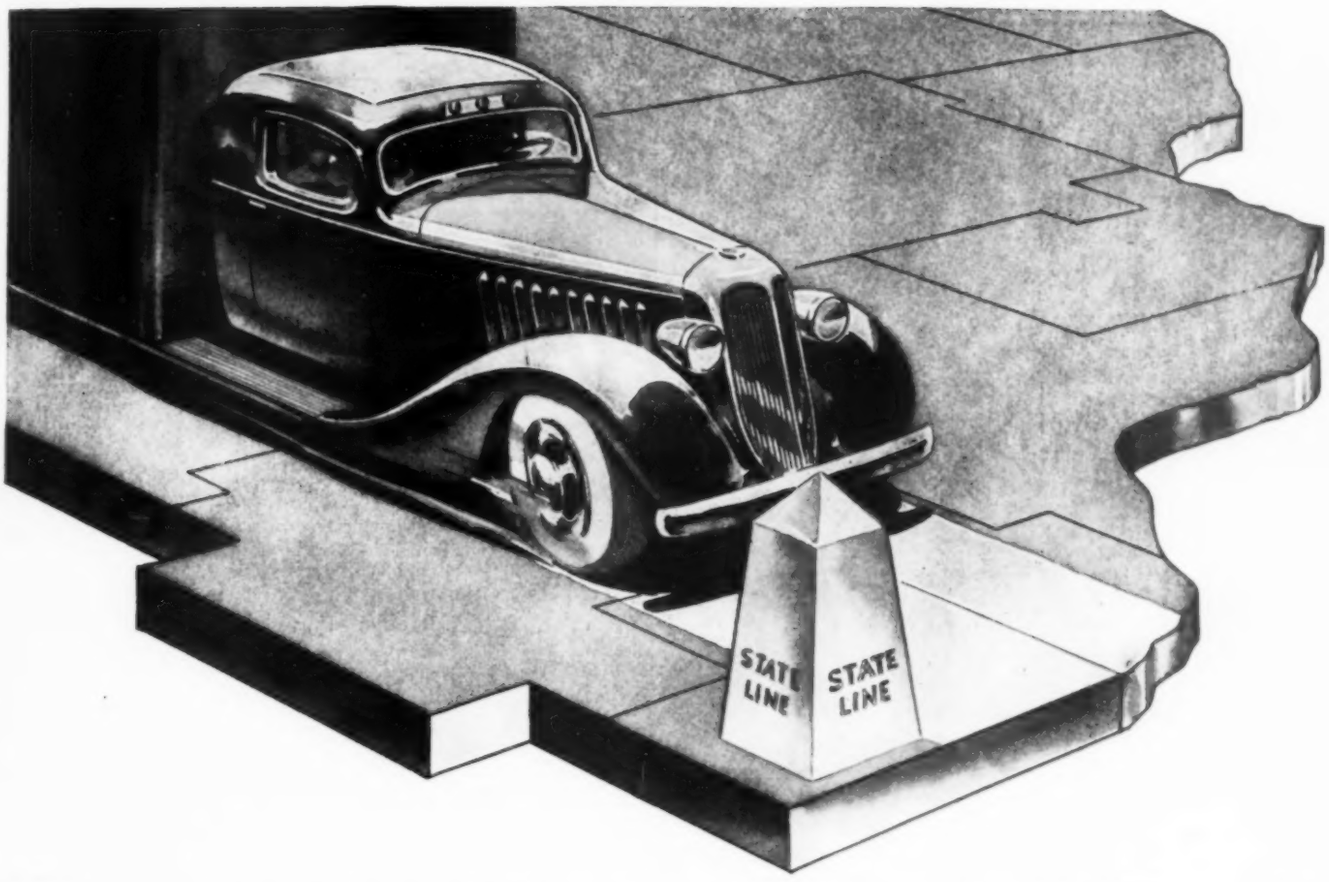
TEXACO PRODUCTS



THE name itself is a symbol of achievement in the blazing of new trails. The plug lives up to its name in contributing a new economy and efficiency of operation throughout the heavy duty field. Edison Spark Plugs are built for the job — *as only Edison can build them!*

EDISON-SPLITDORF CORPORATION, WEST ORANGE, N. J.

ONE OF THE
Thomas A Edison
INDUSTRIES



For *STOPPING RIGHT* in all legal languages . . . including the Pennsylvanian

STATE laws here, there and everywhere, are demanding the kind of truck stopping ability that demands nothing short of genuine Bendix B-K Controlled Vacuum Power Braking. Tractor-trailer trains are especially aimed at.

Take Pennsylvania, for instance. In case of a trailer breaking away from its tractor, the trailer's brakes must instantly set *and hold for 15 minutes.* Bendix B-K Power Braking will do this—and much more.

Make sure, when you have Power Braking installed, that you get the original, genuine Bendix B-K—then you know your trucks will more than meet *any* state law anywhere.

More than 96% of all Power Brakes in use are Bendix Power Brakes. Isn't that mass of world-wide preference ample reassurance of satisfaction?

The cost? *Very* moderate—$25.50 and up, depending on weight and design of vehicle. Write for details.

BENDIX PRODUCTS CORPORATION
(Subsidiary of Bendix Aviation Corporation)
401 Bendix Drive • South Bend, Indiana

BENDIX *Controlled Vacuum POWER BRAKING*

BK VACUUM POWER BRAKING A BENDIX PRODUCT

DO YOU KEEP FLOORS CLEAN THIS EASY WAY ?

In Winter garage floors get dirtier than at other times. You've seen how quickly they accumulate muck, grime, mud and slush.

Winter means closed doors . . . fumes from gasoline, engine exhausts and oil soaked floors. Play SAFE when you clean! Don't use kerosene or gasoline to soften up heavy muck and grease deposits, and DON'T use a steel scraper on cement floors . . . it may cause sparks, the source of fire and explosion hazards. Instead, do your cleaning the SAFE, low-cost, easy Oakite way. Use either Oakite Penetrant or Oakite Composition No. 20. Let solution of these quick-working materials soak on floor for short time, as then a light brushing leaves surface CLEAN, easy to walk on. Oakite materials are rinsed easily and are easy to mop up.

Write today for free booklets giving details on low-cost floor cleaning and other service station maintenance work.

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Industrial Cleaning Materials and Methods

The

FLEET OWNER

Published Monthly in the interests of Automotive Fleet Owners who maintain their own Repair and Service Shops and devoted to the better Operation and Maintenance of Truck, Trailer, Bus, Passenger Car, Taxicab and all Automotive Fleets.

VOL. 15 New York, December, 1935 No. 6

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GMC

Engineered-for-the-job General Motors Trucks and Trailers Are Built to Out-perform and Out-earn

BUSINESS MEN with loads to haul—from 1½ to 22 tons—are urged to see, inspect and compare the modern GMC trucks.

From the quality 1½-2 ton GMC—with its 47 important money-saving features—right through the exceptionally complete line of General Motors Trucks and Trailers, shrewd truck buyers the country over find the kind of performance and economy they need for modern transportation. Included among them are thousands and thousands of well known fleet owners who will gladly testify from cost-sheet records to the downright value that is inbuilt into every GMC unit.

Again we say, see them and compare them! Ask for the facts to prove why seasoned operators by the thousands are swinging to GMC trucks of value.

GENERAL MOTORS TRUCKS and TRAILERS

1½ to 22 Tons

Time Payments Available Through Our Own Y. M. A. C.

GENERAL MOTORS TRUCK COMPANY, PONTIAC, MICHIGAN

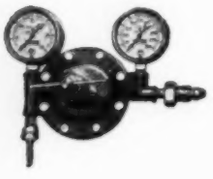
PUROX NO. 4021 CUTTING OUTFIT FOR *Economy Cutting*

PRODUCT OF A UNIT OF UCC UNION CARBIDE AND CARBON CORPORATION

Purox No. 4021 Cutting Outfit Consists of:

Type E Cutting Torch as illustrated with No. 1, 2, 3 and 5 tips.

No. 20 Oxygen Regulator with 300-lb. and 3,000-lb. Gauges and Hose Connections.



No. 30 Acetylene Regulator with 30-lb. and 500-lb. Gauges and Hose Connections.

25 ft. ¼ in. Green Oxygen Hose with Ferrules

25 ft. ¼ in. Red Acetylene Hose with Ferrules

Instruction Manual

No. 201 Goggles

Wrenches

Spark Lighter

PRICE $99.00 COMPLETE

If you prefer, you can buy only the Type E Cutting Torch with 4 tips and wrench for $45.00

THE Purox No. 4021 Cutting Outfit is ideal equipment for foundrymen, structural steel workers, job welding shops, scrap dealers, or anyone with a wide variety of cutting to be done. Because of its ability to take all jobs—big or little—and do them efficiently and economically, it has permitted lower apparatus investment and made thousands of satisfied users everywhere.

The Purox Style E Cutting Torch, standard with the Outfit, is a perfectly balanced torch, weighing only 47 ounces. It can be used for hours on big jobs or in confined cutting places without discomfort. The oxygen and acetylene regulators are sensitive and delicate enough to deliver gases at desired pressures—sturdy enough to withstand the vibration of high pressures.

Every unit of the Purox No. 4021 Cutting Outfit embodies the skill and practical experience of Oxweld Acetylene Company, the largest manufacturer of oxy-acetylene welding and cutting equipment. This assures the low initial cost, low operating cost, and high quality you look for.

Ask your jobber to demonstrate this outfit to you today, or write to 30 East 42nd Street, New York, N. Y. for complete information.

THE LINDE AIR PRODUCTS COMPANY
Unit of Union Carbide and Carbon Corporation
UCC
New York

PUROX

WELDING AND CUTTING APPARATUS AND SUPPLIES

OKLAHOMA CITY, OKLA.—*"We are using Champion Spark Plugs in all our equipment. We are well pleased with the service we receive." Writer, Clanton Transportation Co., who operate as well the Southwestern Motor Carriers and the Panhandle Motor Lines, Inc.*

NEW JERSEY—*The New Jersey Bell Telephone Company uses dependable Champion Spark Plugs to keep their 860 units operating at a maximum of efficiency in order to maintain dependable phone service throughout the state.*

Leading bus and truck fleet operators find the Champion Service Unit an invaluable asset in keeping engines economical and efficient. It is the only complete spark plug service unit for cleaning and testing spark plugs and is the means of keeping bus and ton mileage costs at a minimum. The Champion Service Unit belongs in every progressive fleet shop.

Champion Spark Plugs are preferred by the motoring millions all over the world for two sound, simple reasons. One is their own personal, every day experience with Champion's better performance; the other the dramatic fact that practically all of the world's racing events have been won with Champions for 12 straight years.

KEEP ENGINES YOUNG • • • TEST AND CHANGE SPARK PLUGS AT REGULAR INTERVALS

Try it

FOR HAULING AND DELIVERY UNDER YOUR OWN OPERATING CONDITIONS

THERE are no experiments in the 1936 Ford V-8 Trucks and Commercial Cars. Every feature has been PROVED and APPROVED by millions of miles of service under every conceivable condition of load and road and weather. Its 80-horsepower V-8 engine has proved its economy and reliability on the world's greatest proving ground . . . the job itself. Its full-floating rear axle with straddle-mounted pinion . . . full torque-tube drive . . . positive, quick-action safety brakes . . . and many other quality features have proved the soundness of Ford design by their performance in actual service.

This impressive record offers convincing proof of V-8 Reliability. The cost records of owners firmly establish V-8 Economy. And V-8 Performance needs no confirmation, for it is evident everywhere you look. Thus, Ford V-8 Trucks and Commercial Cars have been PROVED BY THE PAST. Now they have been IMPROVED FOR THE FUTURE. Your Ford dealer invites you to make your own "on-the-job" test without cost or obligation. He will be glad to tell you the details of the money-saving Ford engine-exchange plan. Call him today and set a date.

Convenient Universal Credit Company credit plans make this great truck value immediately available

FORD V-8

TRUCKS AND COMMERCIAL CARS

VOL. 15
NO. 6

FLEET OWNER

DECEMBER
1935

DEVOTED TO THE BETTER OPERATION AND MAINTENANCE OF TRUCK, TRAILER, BUS, TAXICAB, PASSENGER CAR, AND ALL AUTOMOTIVE FLEETS.

Stripping *the* Thread » »

(The Editor's Column)

MORE ABOUT DIESELS

● Who said people don't read trade publications? . . . . Anyway, we know that a great many fleet operators read *this* one, because so many requests for *further* information on Diesel engines have come in, as a direct result of our "Diesel Encyclopedia" in last month's issue, that we are literally swamped with work in trying to take care of all of them. . . . By this method of reasoning, we have concluded that fleet men are still looking for all the information that they can find on the subject and therefore your Editor hied him over to Newark last month where the S. A. E. held a discussion on Diesels. . . . What he heard in this discussion has been carefully noted, set up in type, and appears in the form of a rather lengthy article on pages 26 to 30 of this issue. . . . This is *our* method of trying to keep you informed. One of the privileged few who had the opportunity of reading this article before publication, suggested that we call it "Unglorifying the Diesel" . . . . Surely it is not so bad as that. In all sincerity, we believe that it gives a *true* picture of Diesel progress in the automotive industry thus far. It should go a long way to help correct certain fallacious impressions and to help the Diesel industry get started on the right foot. . . . The Diesel industry, as applied to automotive vehicles, is still in its infancy, you know, and as with all new things, certain misapprehensions can do more harm than good. . . . So, when reading and digesting this article, please bear in mind that it is simply a "report." Who is more capable of discussing so important a problem than fleet operators at an S. A. E. meeting? And who should be the one to impart the correct information to you, other than your humble Editor? . . . . We hope you find it interesting, and if there is anything in it that sounds "screwy" to you, we'd like to hear about it.

●

GREETINGS!

● This publication will probably be in your hands much too early to carry a Christmas Greeting, but your Editor wants you to know that our entire staff would like to personally clasp the hands of all of our readers and say "Merry Christmas!" . . . . Or perhaps "Happy New Year!" . . . . And while we are about it, how about using more Christmas Seals this year, boys? . . . . Each penny

that you spend for Christmas Seals at this time of the year contributes to a worthy cause, and the organization responsible for this work is quite deserving of everyone's support. . . . Perhaps we are a bit early in talking about Christmas, but that, folks, is one of the penalties that a publication pays for coming out early in the month. . . . There is nothing that we can do about it but say it now. So here goes: *"Merry Christmas"*—and a *"Happy New Year"* too!

●

OUR OWN PRIZE CONTEST

● It's all over but the mailing of the checks. That will have been done by the time you are reading this. . . . We refer, of course, to our own "Prize Contest" which took the form of a question, *"What Shop Equipment is Most Valuable to You and Why?"* . . . . Elsewhere in this issue you will find the names and addresses of the "winnahs," as well as reproductions of their literary efforts which won such honorable mention. . . . Those who participated, and whose work was not singled out for publication, will receive "consolation" prizes in the form of carefully prepared summaries of all of the answers. . . . And when you get finished reading the results of our contest, you'll have a better idea as to what shop equipment is earning big dividends for other fleet operators. . . . That was our only purpose in conducting this "contest" . . . . And since this is a special "shop equipment issue," may we call your attention, also, to our "Shop Equipment Encyclopedia" which appears on pages 53 to 61 of this issue. In it, we have tried to include a well-balanced assortment of new (or fairly new) shop equipment that is designed to help you cut fleet costs. . . . If you find this special editorial effort of value, tell us about it, please; then perhaps we will decide to make it an *annual* affair, as a part of our editorial service to you. . . . And in closing, it is interesting to note that a *bus* operator won the first prize, proving among other things, that FLEET OWNER is a welcome monthly visitor to *bus* fleet operators, as well as to truck, taxicab and passenger car fleets.

(Please turn over)

●

H. Clay Fischer

Editor

●

YOU SEE IT "FIRST" IN FLEET OWNER

The Editor's Column » »

(Continued from Page 13)

PREVENTIVE MAINTENANCE

● At another session of the recent S. A. E. Transportation Meetings in Newark, N. J., one of the General Motors Truck Company men presented the G. M. C. Preventive Maintenance System in its latest and most improved form. . . . Up until this time, we have published stories about operators who used this system, illustrating some of the forms and showing how they have applied them to their own particular fleets. . . . The improved system (which we understand is constantly undergoing improvement) promises a more thorough method of checking up on mechanical failures than heretofore, and goes into the subject of Preventive Maintenance a bit deeper, segregating the various units of engine and chassis in a little better and more intimate order. . . . All of which we learned by listening to an excellent, illustrated talk given by O. M. Brede, GMC's Director of Service. . . . One of these months you'll have the opportunity of analyzing the new system and studying some of the forms, in this publication—the idea being to disseminate as much general information on the subject of Preventive Maintenance as we can lay our hands on. . . . You'll be looking for it, won't you?

●

AGAIN, SALESMEN'S CARS

● Those much-mooted questions, *"Should the company or the employee own the car?"* . . . *"In what form should reimbursement for expenses be made?"* . . . *"What are some of the predominating policies with relation to financing new cars, insurance, trade-ins, personal use of cars, etc?"* . . . Splendid material for our Question-of-the-Month Department; one of these days we'll spring this questionnaire on you (other publications take note) and there will be some valuable information gleaned thereby. . . . In the meantime, if you are interested in the problem of establishing effective and economical control of the operations and expenses of automobiles used on company business, we can help you out with a detailed report on the subject. . . . It's a 36-page survey, made by the Metropolitan Life Insurance Company, who exhausted every single source of research information in order to give you an intelligent picture of the experiences of 53 different companies with respect to control of salesmen's cars. . . . We know that many fleet men will find this report valuable in many ways; that is, until our own survey on this subject is made available. . . . If you'd like a copy, without obligation of any kind, just let Editor Fischer know about it, and we'll be glad to get one for you promptly. . . . And, in case you are in doubt, this has nothing to do with insurance solicitations, in *any* form.

●

ANY ICE TODAY, LADY?

● Create enough demand for something, and someone is bound to come along with the answer. . . . In spite of the increasing sales of electric refrigerators, your Editor receives from time to time, requests for information covering enclosed bodies for domestic retail ice delivery. . . . Here is one of the "answers"—the result of close cooperation between Studebaker commercial car representatives in Los Angeles, and engineers of an ice manufacturing company, who claim this to be the most efficient ice-delivery job in existence. . . . The

details? Sure! . . . A neat-appearing, streamlined body mounted on a Studebaker 1½-ton chassis. Full cork insulation, built into the entire body, protects the load at a temperature far below the melting point, prevents "wagon shrinkage" and enables the operator to put the ice in the consumer's box *before* the melting starts. . . . A feature is the tricky, dustproof, sliding rear door, which insures a sanitary condition that is bound to appeal to every housewife—dirty blankets and quilts being entirely eliminated. . . . If you'd like further details, write to W. H. Edwards, care of Studebaker, South Bend, Ind., who proudly exclaims, "Now you can deliver your ice—and *keep* it, too!"

●

BET IT WAS US?

● "Any operator of trucks may increase the efficiency of his units by reading the instructions coming daily from every source in this vast industry," reports *The Marquette Lubricator*. . . . They further counsel you *not* to be like the fleet executive who wanted advice on a certain problem in his business, and who, as the story goes, called in a well-known "expert" and was told about the experience of another company in a similar line, who had worked out a problem identical in every respect. . . . The bill for the "advice" was $1,000 and it was gladly paid because it solved the problem. . . . However, in a business magazine (perhaps this one) lying unopened on his desk at the very time he was talking to the "expert," lay the self-same story which said expert had told him for one grand. . . . Our thanks to Mister Marquette, who closes with the admonition, "Let's learn to read; then read to learn."

●

THE FRONT COVER

● The pictures which appear on the front cover of this issue are symbolic of the issue itself—a special Shop Equipment issue. . . . We believe that fleet operators everywhere will use this issue as a reference manual for months to come, as we have tried to incorporate into our "Encyclopedia" some of the latest tools and equipment that are especially designed to help fleet operators reduce maintenance costs. . . . Credit for the design and layout of our front cover must go to The Sherwin-Williams Company, who believe that shop equipment for painting motor vehicles is just as important as shop equipment for repairing them. . . . And we agree with them. And so does Tom Maloney, that expert in the art of photography, whose camera carriers visited several fleet shops in order to obtain the pictures for this special assignment. . . . If you'd like to see pictures like these on our front cover each month, instead of a "handbill" announcement of the feature articles in each issue, please let us know about it. . . . After all, it's the *reader* who writes the ticket, so far as *this* publication is concerned.

TAKE NO CHANCES !

THIS *VOLT-O-MATIC* GENERATOR PROTECTS YOUR BATTERIES... ITS YEARS OF PERFECT SERVICE PROTECT YOUR INVESTMENT!

A BUS crawls along a traffic-choked crosstown street. It starts; it stops; it starts again. *What a drain on the battery!*

A giant truck looms out of the night...headlights blazing; tail lights gleaming, a circle of small lights glowing protectingly. *What a drain on the battery!*

A police car, radio switched on...alert 24 hours a day. *What a drain on the battery!*

Under such excessive demands of today's service, how can you protect the battery? The principle of voltage regulation...as employed for many years in Volt-O-matic Generators—is now being recognized at last, as *THE* dependable answer! The Volt-O-matic Regulator automatically feeds the current to the battery in accordance with its needs...a heavy charge when the battery is low...a tapering current supply as the battery is recharged.

You take no chances with the Volt-O-matic Generator—it has stood the test of years! Its workmanship is unexcelled anywhere in the world. It is permanently lubricated—as trouble-free as inherently correct design, fine materials and conscientious construction can make it!

Investigate—especially if you are having battery or generator troubles of any kind! Let us show you how Volt-O-matic Generators can minimize maintenance, help maintain schedules, assure you of steady bright lights, safer horns, more efficient ignition, dependable radio reception and—longer battery life! Mail coupon for full information.

TYPICAL CASE HISTORY:

"We have 15 Volt-O-matic Generators in operation . . . all doing a fine job. 6 of these are more than 7 years old and are still giving good service. They have been very profitable to us... they seldom need repair and we have no difficulty in keeping our batteries charged at all times, and at the same time not having battery trouble by overcharging.

"Volt-O-matic Generators greatly prolong the life of our batteries. We feel that this generator performance is wonderful because most of our trucks are equipped with all the modern devices; and in addition to the 32 candle power headlights most of our trucks have 16 smaller lights and signal lights to drain the battery and generator. They have paid for themselves many times in their economical performance."

R. K. CARTER, *President*
Carter Brothers, Inc.
Richmond, Va.

● We have always taken pride in creating, designing, building and selling products superior to those commonly in use. Built to a high standard of quality, these products are proven leaders in their fields.

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DETACH HERE

UNITED AMERICAN BOSCH CORPORATION, SPRINGFIELD, MASS. SEND BOOKLET ON SUBJECTS CHECKED:

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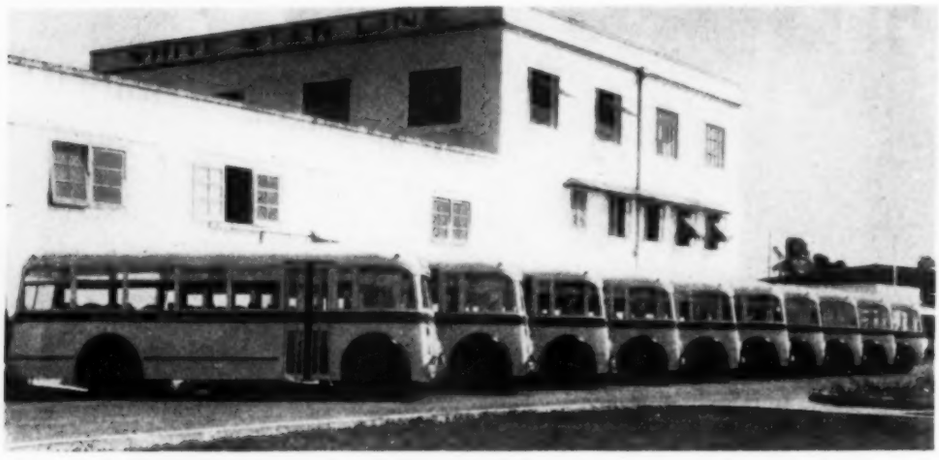
- ☐ Neverstall Windshield Wipers
- ☐ Semaphores
- ☐ Vibro-Balanced Horns
- ☐ Fog & Ditch Light
- ☐ American-Bosch Coils & Condensers
- ☐ American-Bosch Car-Radio
- ☐ American-Bosch Battery Chargers
- ☐ American-Bosch Magnetos
- ☐ American-Bosch Home Radio
- ☐ Pyro-Action Spark Plugs (25)

TEAR OUT COUPON AND WRITE NAME AND ADDRESS IN SPACE BELOW



(The Prize-Winning Story)

•

Welding Equipment *is* Most Valuable

By S. D. MacMurray

Assistant General Manager,
White Star Bus Line, Inc., Hato-Rey, Porto Rico

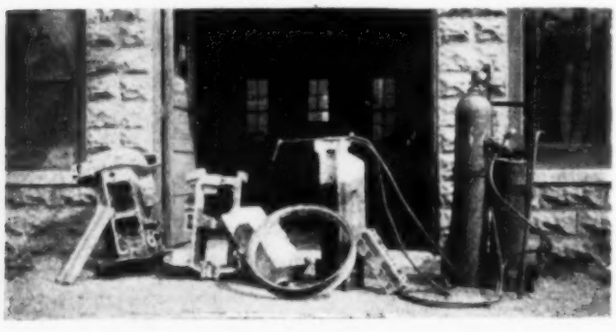
LET us begin by stating that we have one of the most complete shops that one could expect to find devoted only to the maintenance of a medium-sized (160-vehicle) city service bus fleet. Every item of repairing and reconditioning work is handled in our own shop on the departmental unit basis by operators who are experts on the particular unit.

In addition to the above mentioned work, we have a completely equipped Electrical Department which handles all of the repair work for electrical units such as starters, generators, horns, etc. In this department, starters and generators are re-wound, shellacked and baked in a baking oven, then assembled and the condition of the part is checked before being approved and placed in reserve. Inspection of generators includes checking voltage output on a running-in machine prior to being OKed.

A division of the Electrical Department is the Battery Department in which we build all batteries used by this company; we buy the best quality cases, covers, plates and separators from reliable manufacturers, mold the posts and assemble the batteries in our own shop at a total cost of about 50% of the factory assembled battery. This department also rebuilds worn out batteries, replacing the plates and separators in defective cells, as well as attending to the charging and routine maintenance of all batteries.

Our Tire Department is equipped with tire-changing equipment and vulcanizing equipment for the repairing of both tires and tubes. The vulcanizing equipment is in daily service and has paid for itself each year for the last six years that we have had it in operation.

We have used oil reclaimers for five years and the



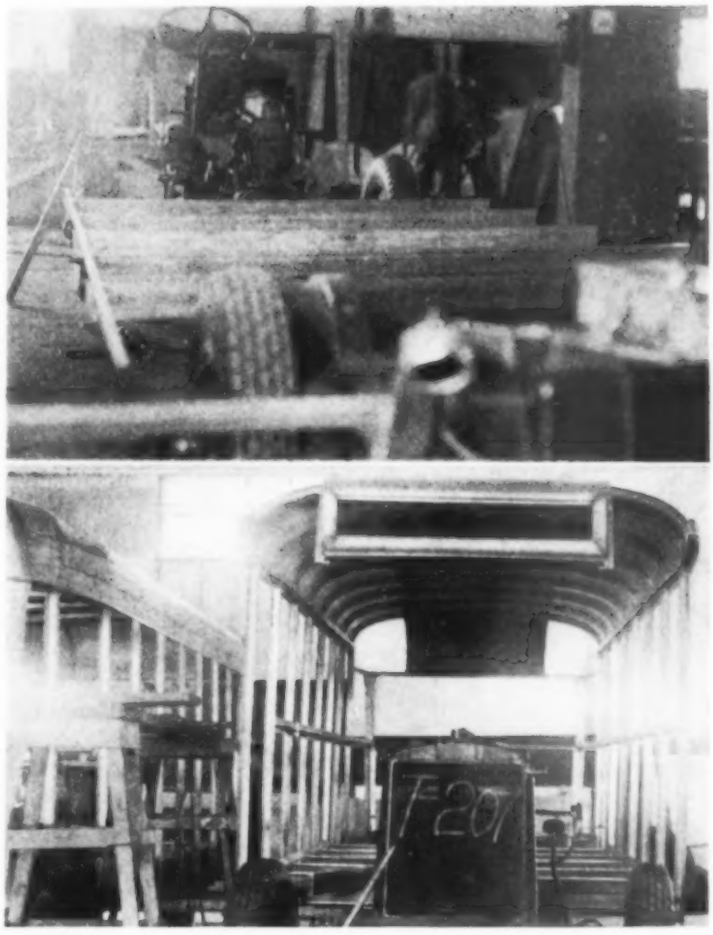
machine which we now have in daily operation, pays us about $100.00 a month net profit.

The above has been written to give the reader an idea of the scope of our shop work and of the equipment necessary for carrying on such functions. However, to avoid the impression that we may be considered exaggerating, concerning our equipment, let us call to your attention, first, that when this company was organized there were no outside shops equipped for giving rapid, efficient repair service on any damaged units; thus we were forced to install equipment for handling all types of repair work.

Secondly, we are about ten days or two thousand miles from the nearest reliable source of spare parts, and no matter how efficient our stores department may be, there are times when without the aid of the shop equipment for emergency repairs, a vehicle would be out of service at least two or three weeks awaiting the arrival of the replacement part.

Thirdly, after experiencing the economy realized in maintenance costs, the efficiency of having defective parts repaired immediately, and the independence of not having to depend on any outside shops to keep our buses in operating condition, we would not consider the elimination of a single item of our shop equipment. Thus, you see that we have had a wide and varied experience in the use of all types of shop equipment.

But THE MOST VALUABLE EQUIPMENT which we have is our WELDING OUTFIT. This outfit is composed of two portable carriages carrying the oxygen and acetylene cylinders, hose, tips, wire brushes, etc., and a 200-amp. stable arc-welder. The latter machine is also portable but recently we wired up the machine shop and inspection garage in such a way that the welder can plug into an outlet at almost any place where arc-welding is to be done, thus avoiding a loss of time and effort in pushing around the heavy arc-welding machine.



THE White Star Bus Line builds all of its own bodies and uses a great deal of aluminum to cut down the dead weight. These two views show different stages in the body construction, in which a great deal of welding is used, both electric arc-welding and oxy-acetylene welding.

To give a list of all the work done by this outfit would be equal to listing about half of all the jobs done in the inspection garage and machine shop. However, below are listed a few of the jobs done by the welding outfit; we keep two welders busy, which could not be done in any other way even half as rapidly or cheaply. Here are some of our "every-day" welding jobs:

Welding cracked bus seat legs.
Patching holes cut in motor crank-cases.
Welding broken bus chassis.
Cutting loose damaged riveted chassis spring shackle supports.
Welding re-enforcement braces in I-beam of broken front axles.
Welding broken rear axles in lathe (for proper heating).
Welding cracked brake shoes.
Welding snapped bumpers and supports.
Welding split rear axle housings.
Welding cracked cylinder-heads and blocks.
Welding broken fenders and hoods.
Refilling bolt holes which have worn too large.
Welding together 2" angles for making battery supports in buses.
Welding cracked steel wheels.
Welding together of angles and heavy wire-mesh to make guards for compressor belts.
Spot-welding onto steel posts supports for fire extinguishers.
Lengthening or shortening propeller shafts.
Heating tie-rods, steering shafts, etc., in lathe, prior to straightening.
Refilling worn universal joint yokes.
Welding or straightening bent or broken hand brake levers, gear-shift levers, brake and clutch pedals, etc.
Welding broken transmission cases.

The above list is not complete but we have given enough examples for you to see why we consider the welding outfit to be the most valuable equipment that we have. Whether to use gas or arc-welding on a particular job is governed by the general conditions and the type of repair which is to be done. But we find that the use of arc-welding is increasing with the improvement in variety and quality of the welding rods.

Since we also build all of our own bus bodies, it is important to mention that we do a great deal of welding work in their construction. We use a lot of aluminum, to cut down weight, and take advantage of the possibilities of welding aluminum, by both

(*Please turn to page* 70)

(Another Prize-Winning Story)

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Exhaust Gas Analyzer is Most Valuable

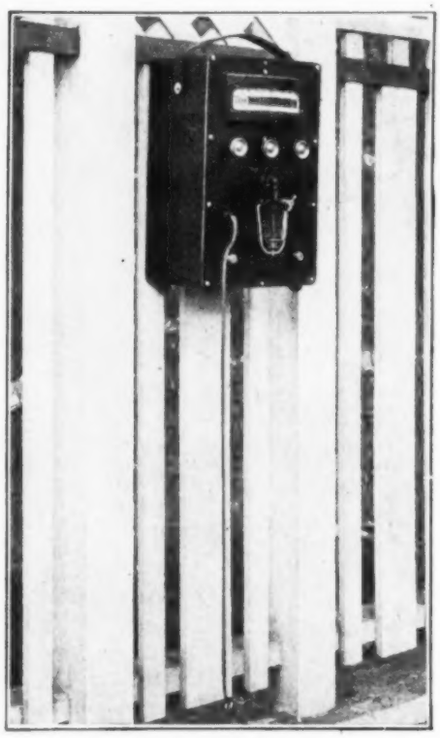
By F. C. Fiechter,
Fleet Manager, John Wanamaker, Inc., Philadelphia, Pa.

THE question, "What Piece of Shop Equipment is Most Valuable to You and Why?" while seemingly a simple one to answer, becomes a rather embarrassing one for a poorly-equipped organization, and a rather difficult one for a well-equipped organization.

Therefore I shall endeavor to make a reply as a fleet operator in the middle group, and without hesitation, wish to state that the most valuable piece of shop equipment of recent years, in our own experience, is our Exhaust Gas Analyzer.

This piece of shop equipment has played such an important part in making it possible for our service organization to maintain our motor equipment in condition for operating economically, safely, with maximum power output, and with a minimum of road delays that might be due to failures anywhere within the power plant and its accessories.

Furthermore, by keeping our power plants in an efficient condition, we are enabled to enjoy greater driver confidence, increased production, lowered maintenance costs, increased motor life, and last but not least, our Exhaust Gas Analyzer has been the only positive means for our inspectors and supervisors to ascertain power plant conditions, troubles, or difficulties, accurately and quickly, thereby avoiding haphazard guess-work as to *probable* power plant troubles that might otherwise be incorrectly based on the complaints of drivers who are not mechanics.



This is the Exhaust Gas Analyzer which Mr. Fiechter has selected as being his most valuable piece of shop equipment.

On the other hand, I do not wish the above statements to leave the impression that this casts a reflection on the usefulness of the many other pieces of shop equipment that we have and use, many of which are very important and valuable adjuncts in the operation of a fleet service department.

Therefore, may I inject a few kind words in behalf of one or two other members of our great shop equipment family. In the "preventive maintenance" group there is no greater asset than that of modern greasing equipment, supplemented by the hydraulic lift, and the latter's "uncle," the hydraulic jack. These should receive honorable mention, at least.

Of course, we have so many necessary items of equipment today that any one group should not necessarily receive all of the honors. There is also much in the way of fine shop equipment in our service station that really belongs to the "fixing" group.

In other words, in addition to such equipment for proper inspection, lubrication and adjustments, other shop equipment such as lathes, flexible shaft outfits, drill press, shaper, milling machines and heavy grinding equipment become of secondary importance.

Nevertheless, where the aforementioned methods of preventive maintenance do not prevail, some of the latter shop equipment unquestionably would develop as being the most valuable to the fleet operator's service department.

Regardless of the make, kind, application or use of such equipment, no piece of shop apparatus need be classified as useless under any circumstances. For when such pieces of equipment or apparatus are used skillfully, frequently, or their adaptability is made use of each time the na-

(*Please turn to page* 70)

"NEVER LATE BECAUSE OF TIRE TROUBLE"

says CLAYTON BURDETTE
DRIVER FOR LETT and CO., CINCINNATI

No More Sidewall Failures Since Equipping with Triple Protected Silvertowns

Lett and Company are long distance haulers. Their big trucks and trailers each run 1000 to 3500 miles per week. Schedules are rigid. Delays mean a cash penalty. Tires must bat 1.000 day after day, month after month. And that's just the record that Goodrich Silvertowns have set!

Here's what one of their veteran drivers, Clayton Burdette, says: "I've had five years of night driving over the worst kind of roads. There are many places where a tire failure would mean a bad wreck, a 12-ton payload of meat in the ditch. But I've never had a sidewall break with Triple Protected Silvertowns. I've never been late because of tire failure of any kind."

Thousands of other truck drivers will tell you similar stories. The new Goodrich Triple Protected Silvertowns have revolutionized truck tire standards. It's easy to see why. Look at the facts—80% of premature failures occur in the sidewall—the "Failure Zone." And Goodrich gives you the only tire that has this 3-way protection at that danger point:

1 PLYFLEX—a *new*, tough, sturdy rubber material with greater resistance to stretch. A layer of Plyflex in the sidewall prevents ply separation—distributes stresses—checks local weakness.

2 PLY-LOCK—the new Goodrich way of *locking* the plies about the bead. Anchoring them in place. Positive protection against the short plies tearing loose above the bead.

3 100% FULL-FLOATING CORD—Each cord is surrounded by rubber. With ordinary cross-woven fabric, when the cords touch each other, they rub—get hot—break. In Silvertowns, there are no cross cords. No friction.

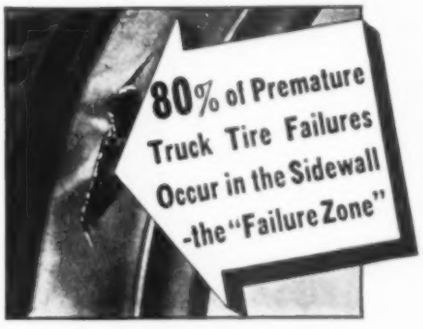
Why not get the long, slow wear of this radically different tire? Avoid blow-outs, sidewall breaks and premature failures. You can now get this costly tire for the same price as other standard makes . . . There's no premium to pay!

HOW OWNERS OF 1/2-TON TRUCKS CAN SAVE MONEY

Here's a new kind of tire for half-ton trucks. It's the Goodrich "Commercial 15"—a low pressure tire with all the advantages of a truck tire and automobile tire combined. Cushions the load, gives longer mileage, provides blow-out protection and non-skid safety. Ask to see the "Commercial 15"—the new cost-cutter for delivery trucks.

FREE! TRUCK OPERATOR'S MANUAL

This big 44-page pocket size handbook is crammed with money-saving information for truckers and drivers. Gives weights of commodities, tire load capacities, dual spacing charts, load analysis, etc. No obligation. Write for free copy. Address Dept. T-111, The B. F. Goodrich Co., Akron, Ohio.



Goodrich *Triple Protected* Silvertowns

SPECIFY THESE NEW SILVERTOWN TIRES FOR TRUCKS AND BUSES

(Another Prize-Winning Story)

•

Oil Reclaimer is Most Valuable

By Dwight H. Woods,

Engineer—Distribution,
Nashville Gas & Heating Company,
Nashville, Tenn.

OUR most valuable piece of shop equipment is our oil reclaimer. This machine was purchased in 1931 and has been used constantly since, turning out about thirty gallons of oil per month, and to date has had only two repairs made to it—a new oil pump and some shaft packing for the new pump.

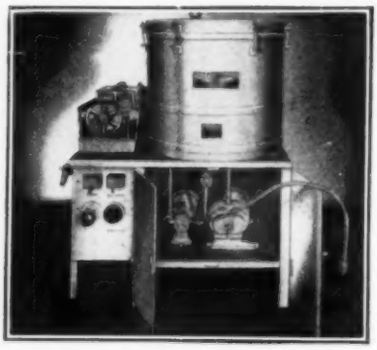
This machine is of the make and type illustrated on this page, and is of the "batch operation" type. It holds nearly six gallons of drainings and from it, after a period of two hours, it turns out some four-and-a-half to five gallons of finished product.

Its cycle of operation is as follows: The used crankcase oil is pumped into the machine by its own pump from our crankcase drainings settling drum.

Next the switches for the ventilating fan and agitator combined, and for the electric heating elements are turned on, and the machine is then left alone until its signal light comes on, showing that the oil has been heated to 425 degrees Fahrenheit.

Then the special compound (a powder) is added to the oil. We believe this is some form of Fuller's Earth. Next the oil is filtered through a filter press, using blotting paper as the filtering medium.

The only labor required is about five minutes of time to start the machine and ten minutes of time at the end of the heating period, to filter the oil and change the blotters, which is necessary on every other run.



This is the type of Oil Reclaiming Machine which Mr. Woods finds to be the most valuable piece of equipment in his shop.

TABLE I

OIL RECLAIMING COSTS

Original Cost of Reclaimer	$450.00
Depreciation per year	$ 45.00
Interest per year @ 6%	27.00
Repairs per year	2.95
"Fixed" Cost per year	$ 74.95
Oil Purchased 12 mo. 1935	599 gal.
Oil Reclaimed 12 mo. 1935 net	307 gal.
% of Original Oil Recovered	51.2%
Materials Cost per gallon:	
Blotters	$ .0278
Compound	.0139
Electricity (1 KWH/gal.)	.0456
Total Materials Cost per gal.	.0873
Other Costs ($74.95÷307) per gal.	.2440
Total Reclaiming Cost per gal.	.3313
Cost of New Oil per gallon	$ .4900
Total Reclaiming Cost per gal.	.3313
Saving per gallon	.1587
Total Saving per year $ .1587 x 307 gal.	$ 48.72
Percent earned on orig. investment	10.70%

The process which we use turns out a very good-looking oil, and, which is more important, a very satisfactory oil; the latter we have found by making careful operating tests. The reclaimed oil seems to have all of the properties of the original oil, though it is slightly more viscous, but not to the naked eye; it also is a little darker in color.

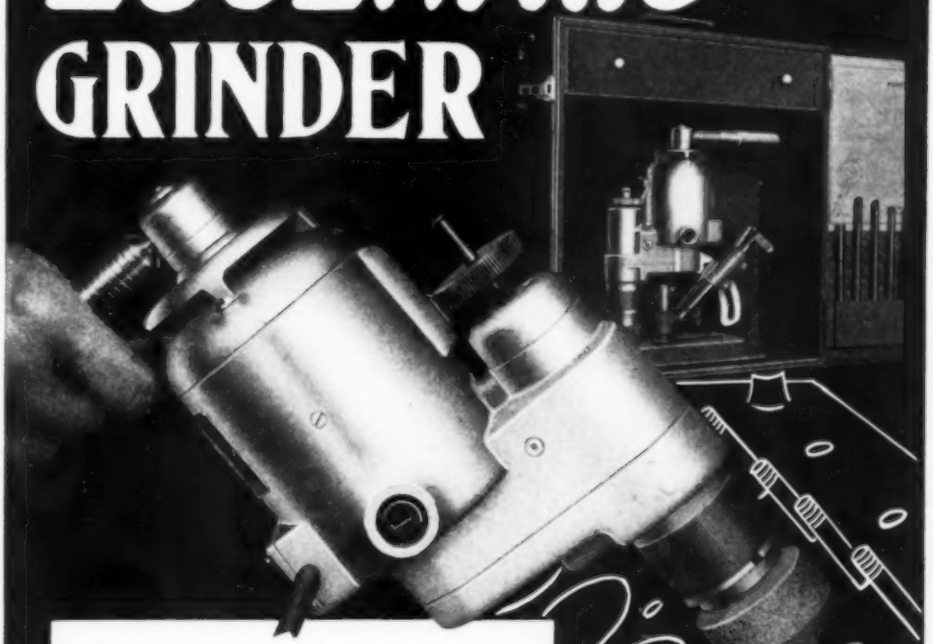
I am attaching herewith a table of operating costs (Table I on this page). In this tabulation you will note that no labor costs have been taken into consideration. This is because there are no labor costs. We require a night emergency man on duty in the building to answer complaints, and he does the oil reclaiming work when not otherwise busy. Or, as Editor Fischer would say, "He's there anyway!"

After perusing the figures you will note that our oil reclaiming machine has been a very profitable investment; at least we consider it as such. Of course, it would become an even more profitable investment to us if we used a more expensive oil, or if we used a larger quantity of oil per month.

And another thing, we do not want to be misunderstood regarding the low price which

(Please turn to page 70)

Valve Seat Grinding ACCURACY Demands the HALL ECCENTRIC GRINDER



● Grinding thousands of valve seats per day in factory production demands week-after-week and month-after-month accuracy. That's why ECCENTRIC Grinding of valve seats is the only method universally adopted by the factories.

This same accuracy and economy in servicing valve seats is possible only in those shops with the ECCENTRIC Grinder. No other method grinds so many seats with so little grinding wheel wear nor with a single dressing of the grinding wheel.

Do as the factories did: Look at them all, then buy the HALL! See your Jobber about it today or write us for literature.

THE HALL MANUFACTURING CO.
1620 Woodland Avenue Toledo, Ohio

Valve Seat Grinding
SAFETY
demands the HALL
SUCTION SYSTEM

● In grinding valve seats, safety and accuracy are of equal importance. The harder the seat the more necessary it is that grindings be kept out of motor.

The HALL SUCTION SYSTEM makes seat grinding SAFE by keeping grindings out of motor parts and is being demanded by leading factories as a part of both production and service seat grinding equipment.

Can be used with ANY Make Seat Grinder

No matter what make or type of Seat Grinder you now own or contemplate buying, you need the HALL SUCTION SYSTEM for safe grinding. Suction Housings are interchangeable and are made in Ford V-8, Plymouth-Dodge and Universal types and may be purchased separately or in GRINDO-VAC Sets for all popular cars, complete with ECCENTRIC Grinder, Wheels, Pilots, Etc.

Ask your Jobber or write the factory today for complete information.

ECCENTRIC Valve Seat Grinder

(Another Prize-Winning Story)

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Our Lathe is the Most Valuable

By V. T. Gibson,

Shop Foreman, State Highway Dept., Childress, Tex.

IN answer to your question "What is the Most Valuable Piece of Shop Equipment in Your Possession and Why?" I would like to enter our Lathe in this contest. The writer is Shop Foreman for the Texas State Highway Department's repair shop at Childress, Texas, and is a constant reader of your publication.

We have a 16-inch by 8-foot turning lathe, of standard make, and we figure that this is the one single piece of shop equipment that we can consider of most value to us. In fact, we have a fairly well equipped shop and consider our lathe more valuable than anything else in it.

We use our lathe for pretty nearly everything, and have found it to save as much as $75.00 or more on just one overhaul of a certain piece of automotive equipment. The various jobs that we can do with it are too numerous to mention in their entirety, but we will outline a few here.

Our lathe is used, for instance, to bore and recondition the cylinders of the Caterpillar "Sixty." This is done by using a shop-made extension grinder, which, incidentally was made right on the lathe itself.

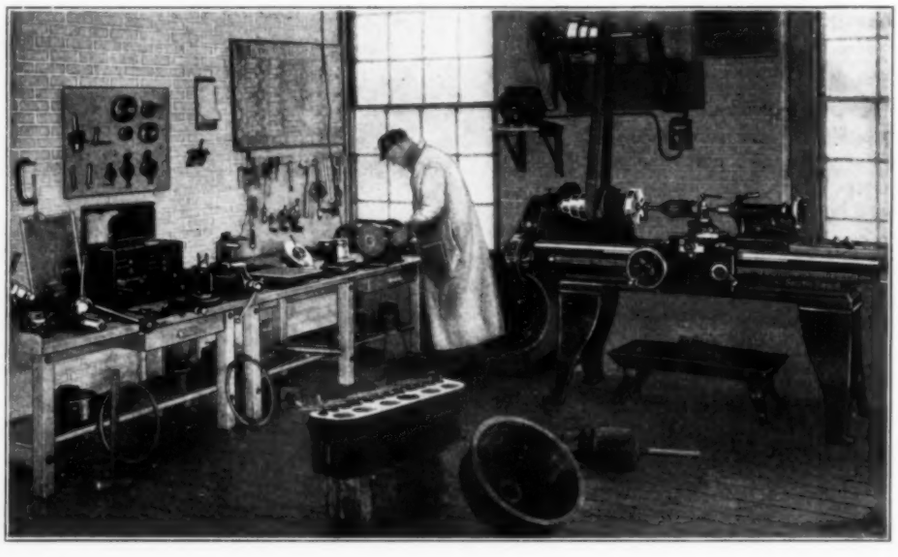
We use the lathe to recondition axle housings and shafts that would cost from $5.00 to $75.00 each to replace. Of course some of these jobs require building-up by welding, but that's another story. However, without the lathe, we could not enjoy this type of salvage operation.

We often find it more convenient and economical to rebore and rebush large worn-out parts, especially large castings and forgings that would cost considerable to purchase, and take long delivery periods. By reboring and inserting bushings to bring these wearing parts back to standard size, the job can be put back into service for a nominal sum. This procedure, of course, does not help the parts manufacturers, but it certainly benefits us as a fleet operator, and small, fast-moving parts are not always salvaged.

Another job for the lathe is pistons. We keep on hand at all times a stock of semi-finished pistons to fit all of our equipment. These we turn down and grind on our lathe, so that when a job is torn down for new pistons and rings, all we have to do is to bore the cylinder, using a cylinder boring machine and hone, to the smallest size it will take, and then finish the pistons to the required size, on the lathe.

By the use of our lathe we sometimes save delays of from two days to two weeks by not having to order certain parts from far-off sources. This is especially appreciated on those jobs for which we are in a hurry. To tie up a large piece of equipment costs money, you know.

The manufacturer of the lathe which we use is able to furnish almost any kind of attachments, such as piston turning and grinding equipment, connecting-rod boring machines, milling machines, brake drum reconditioning equipment, etc., etc., and as fast as we feel the need for additional attachments, it is our intention to acquire the same. At present we have a good number of them.



Other jobs for which our lathe is adaptable are as follows: Truing the armatures of commutators for starters and generators; truing flanges of rear-axle gear housings, wheel

(*Please turn to page* 71)

HAULING COSTS REDUCED

WITH THIS *small* ALUMINUM DUMP BODY

● By keeping detailed cost records, the operator of this 4½ cubic yard Aluminum dump body found that his coal hauling costs could be reduced by as much as 57.5% to 59%. Using bodies of heavier materials, his hauling costs were 54 cents to 61 cents per ton. With the Aluminum body his costs ran from 22 cents to 26 cents per ton. The answer is in the extra pay load carried each trip. The Aluminum body weighs 610 pounds as compared to 1,100 pounds for a similar body of steel. Two trucks were formerly required; however, *one* truck equipped with the Aluminum body did the same job. Aluminum bodies, LARGE or SMALL pay high returns.

In our book, "Alcoa Aluminum for Truck Bodies" there are many examples, like these — "Extra Earnings of $1,200 per Year with Aluminum Body; Pay load Increased 26% by Use of Alcoa Aluminum; This Truck Actually Saves $18.75 a Day; Operator Adds 34 Aluminum Bodies to Fleet." Full details are given in each case. May we send you a copy? ALUMINUM COMPANY OF AMERICA, 1861 Gulf Building, Pittsburgh, Pennsylvania.

ALCOA · ALUMINUM

(Another Prize-Winning Story)

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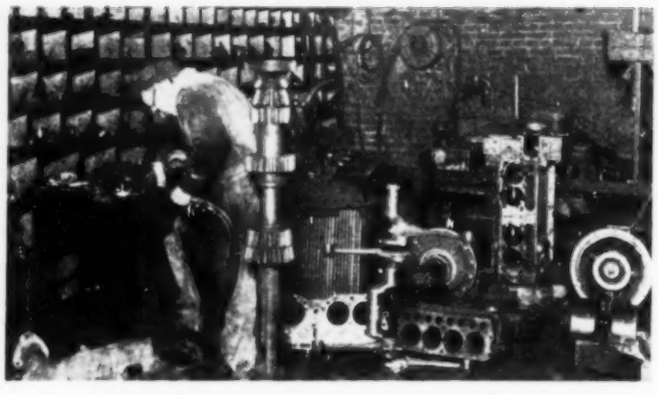
Welding Equipment is Most Valuable

By R. C. Kaster,
Shop Foreman, Johnson County Garage, Olathe, Kans.



IN answer to the question, "What Piece of Shop Equipment is Most Valuable and Why?" I believe that our oxygen-acetylene Welding and Cutting Equipment is the most valuable single tool or piece of equipment that we have in our shop.

First let me give you an idea of the various types of motorized equipment that we have to keep in repair. We have passenger cars, trucks, tractors, road graders, power road maintainers, gasoline-powered shovels, rock crushers, air compressors and rock drills, concrete mixers, etc. We repair all of this equipment at or from our shop.

And here are some of the various jobs that we do with our Welding Equipment: First, the welding blowpipe is valuable in the repair of broken truck frames. In cases of this kind, we cut a piece of channel iron or other suitable material to proper size with the cutting blowpipe and weld it to the frame over the break for extra strength, after first welding the crack in the frame.

We also use the welding blowpipe to build up worn parts; also for welding and brazing broken steel and cast parts. The blowpipe also comes in handy for heating bent parts in order to straighten them, which is often accomplished without removing the parts from the machine. We also heat the hubs of frozen gears, wheels, etc., in order to facilitate their removal from the shafts.

Sometimes bolts or rivets come loose, especially on our graders, where the bolt holes will become elongated or oversize. These we can bronze-weld shut, and re-drill to original size.

We also repair our broken log chains by using the cutting blowpipe to open a good link, heat and spread it; then we hook the chain together and weld the link shut. It goes without saying that we make good use of the blowpipe for making all general car and truck fender repairs and metal body repairs.

And here is another interesting application. Our shop is a part of the Johnson County Engineer's department, and we are often called upon to use the blowpipe for cutting down old road bridges. In many cases we salvage some of the old I-beams and channels, to be used later for smaller bridges by cutting them to the required length. The welding equipment is taken to the job for this work, of course.

Another interesting application of the blowpipe is for rebabbitting operations. On rock crushers, for instance, we melt out the old babbitt from the eccentric bearing and use the blowpipe for preparing the new babbitt for pouring. We do the same thing on all other babbitted bearings, on line shafts, etc.

In most cases we take the welding equipment to the top of our rock crusher bins, where the rock screen and several line shafts are located. The bearing boxes are heated with the blowpipe to melt out the old babbitt, and the new babbitt is then poured in, using the

(Please turn to page 71)

Why the FWD is the Safest Truck

HERE are some of the reasons why FWD is considered the safest truck on the road today:—You will note that the front axle of the FWD is set back farther from the front end of the truck than is conventional practice. This was done for a purpose. It places more of the weight on the front axle. As you know, traction on a wheel is in direct proportion to the weight, and since there is more weight on this axle and since there is also power on this axle, obviously the driver has more control over the truck. There is not the danger of sluing or skidding on slippery or icy roads, or on curves. The front wheels of the FWD grip the road. This safety feature is of importance to you, not only in handling a liquid bulk load where the shifting of the load in the tank is a constant hazard, but also in the transporting of all heavy, bulky loads at the speed required today . . . Write for the complete story on the FWD safety truck.

FACTS ABOUT FWD TRUCKS

Faster Service. FWD's with their powerful engines, wide range of gear ratios and four-wheel traction cut down trip-time by being able to "make" the hills, curves, and poor going, faster than average trucks. No necessity for over-speeding on the straight stretches.

•

Greater Safety. Front axles are set back. *Power*, as well as load on all four wheels, gives the FWD sure footing on slippery pavements, in congested traffic, and when going around curves.

•

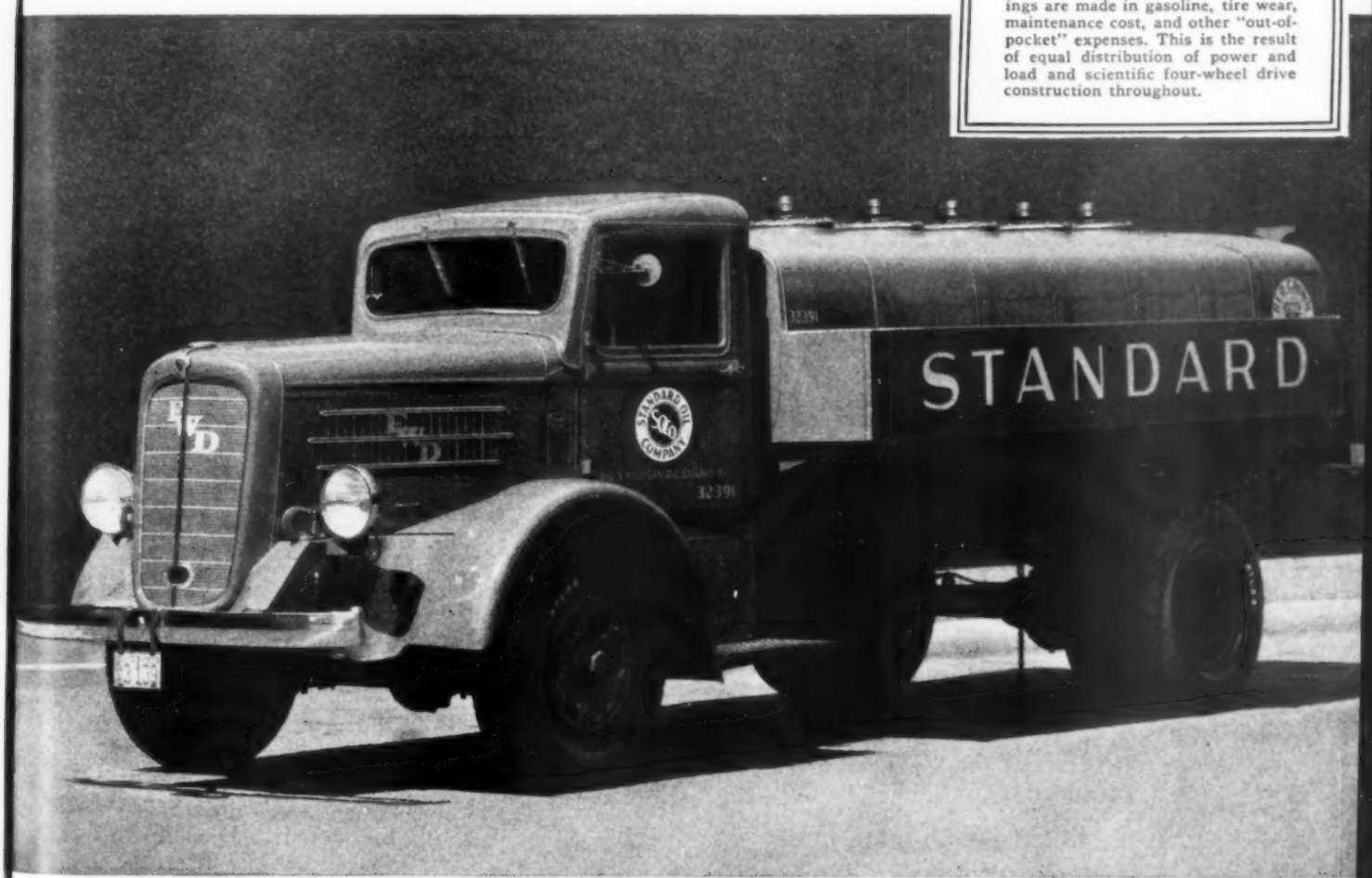
Wider Range of Operation. Four-wheel traction enables the FWD to handle its regular hauling job easily and do the tough jobs as a matter of course.

•

Greater Dependability of Service. Reserve power, rugged construction throughout, and true application of the four-wheel drive principle, insure continuous operation under any condition. Backed by a nation-wide organization of parts depots and service men available at a moment's notice.

•

Operating Economy. Definite savings are made in gasoline, tire wear, maintenance cost, and other "out-of-pocket" expenses. This is the result of equal distribution of power and load and scientific four-wheel drive construction throughout.



One of the FWD's owned by the Standard Oil Company of Indiana

FWD TRUCKS

THE FOUR WHEEL DRIVE AUTO COMPANY
Clintonville, Wisconsin
Canadian Factory: Kitchener, Ontario

☐ The Snow Removal Problem ☐ Use of Extreme Pressure Lubricants ☐ Truck and Trailer Size and Weight Restrictions ☐ Effects of Front Wheel Stability on Public Safety ☐ Purdue University Efficiency Test ☐ Cutting Costs with the FWD Road Maintainer ☐ Making the Most of Controlled Power.

Mr._____

Title_____

Address_____

City_____ State_____

BACKED BY AN INTERNATIONAL SERVICE SYSTEM

• HOW • FAR • HAVE • WE

DIESEL

• FOR • AUTOMOTIVE

THE subject of Diesel engines for trucks and buses certainly seems to be getting plenty of airing these days—in publications such as this one, at meetings, in the newspapers and in general magazines also. Our contribution in the form of a "Diesel Encyclopedia" (see our November issue) is a sample.

Last month the Society of Automotive Engineers held a three-day session on Transportation Problems, in conjunction with the Second Annual Motor Truck Show at Newark, N. J. In fact, the public address system's wires at the Robert Treat Hotel, where the sessions were held, literally "burned up" with a very interesting paper and discussion on Diesel engines at one of these sessions, which lasted for one solid afternoon.

At this meeting, the field engineer of one of America's prominent automotive Diesel engine manufacturers (Waukesha, if you must know), presented a very interesting paper, which covered the subject of "The Operation and Engineering Problems of the Injection Engine." As applied to automotive highway transportation, of course.

THOSE who attended the S.A.E. Transportation Meeting in Newark, N. J., last month, heard ONE answer to this question. . . . Those who didn't will have the opportunity of reading it here.

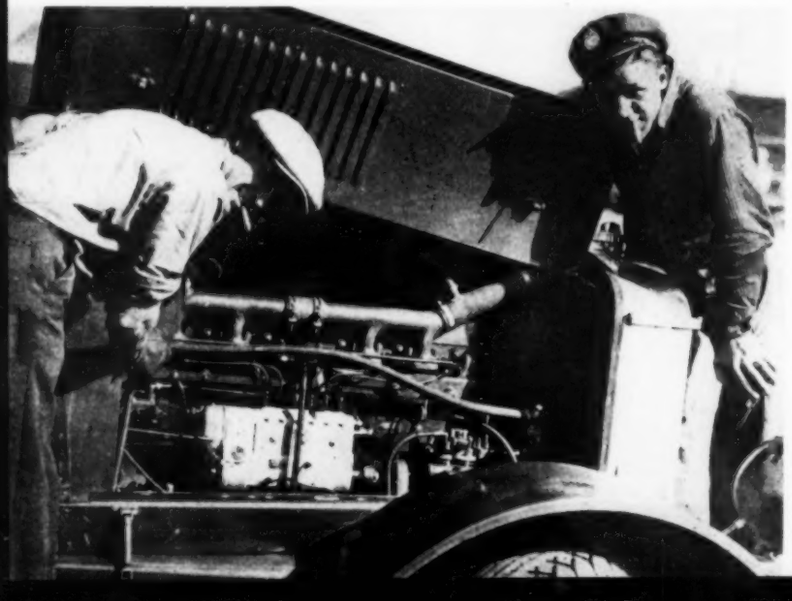
T. R. Kelley was the man who prepared and read the paper. He started off by warning the attending fleet operators against the many pitfalls that would be sure to accompany the *indiscriminate* installation of Diesel engines as replacements for gasoline power, where due consideration is not given to clutches, transmissions, drive-lines, axles, etc.

He also suggested that, under present conditions, no operator should even consider the use of a Diesel engine for a vehicle that will be operated less than 200 or 250 miles per day; otherwise, he said, the "economies" effected will not be great enough to amortize the extra first-cost of the Diesel engine. Mr. Kelley gave several examples where Diesel engines have been sold where they could not "pay their way," as the gasoline and fuel oil price differential was so slight that the savings were not sufficient to warrant such installations.

On the other hand, where miles, loads, and fuel costs *are* considered and conditions are found to be ideal for Diesel operations, substantial savings *can* be made, and he pointed out several actual cases. In one of these cases, a truck powered with a Diesel engine showed a saving of $1,705.00 in 90 days of operation. This, however, is in excess of the average figure, and the unusual saving was made because this truck operated under *very* ideal conditions.

Another point which he stressed concerns the size of the Diesel, where a replacement engine is being considered for installation in ex-

• THE BOYS SEEM TO LIKE DIESELS



PROGRESSED • WITH • ENGINES TRANSPORTATION? •

By H. Clay Fischer,
Editor, FLEET OWNER

isting gasoline-powered equipment. The cubic-inch displacement of the new Diesel, he said, should be approximately the same as that of the gasoline engine which it replaces; it can be perhaps five or ten percent greater in displacement—but no more! For, if too large an engine is installed, the job is most likely to turn out as a misfit, and you need not be surprised if you encounter countless service difficulties, road breakdowns, mechanical failure of drive units, etc.

Again on the other hand, if a new Diesel engine is advisedly and properly installed into either a new or used truck, one can now expect reasonably good service and few headaches, *providing* that the operator will take time out to see that his service personnel becomes fully acquainted with the characteristics of Diesel engines and their fuels.

In fact Mr. Kelley's company has made it a practice to insist that any fleet operator using his make of Diesel engine, should send at least one representative to the factory Diesel school, to insure continuous and successful operation of the engine after it is placed in service. It goes without saying, he implied, that Diesel engines will not be operated successfully until the operator has had thorough training in the care and operation of the engine, as well as the use of proper fuels and lubricating oils.

While on the subject of fuels, it is interesting to review the fact pointed out by Mr. Kelly, that "a Diesel engine will not run well on coal, crude oil, bunker oil, or crankcase drainings." The old belief that a Diesel engine will operate on "any oil that will run through a pipe" must be branded as a "fake." If you are among those who believe that Diesels can be run on crankcase drainings, thinned-out transmission lubricants, vaseline or cold cream, the first thing to do is to forget about it. The next thing to do is to connect with a reliable source of supply on fuel oil for Diesels.

Considerable work is now being done by major oil companies to make good Diesel fuels generally available. Rather than print a technical description of the properties that a good Diesel fuel oil should have, it is easier to sum up by saying that most Number 2 and 3 furnace oils now being sold throughout the country will meet the specifications of automotive Diesel fuels. And if your source of supply is a *reliable* one, you should experience no difficulty. It is vitally important, however, that the fuel must be *clean!*

The matter of lubricating oil for Diesels is of equal importance. There are many oils now on the market that will cause serious piston ring and valve stem sticking if used in Diesels, according to Mr. Kelley.

(Please turn to next page)

• HERE'S A TYPICAL DIESEL UNIT

AUTOMOTIVE DIESEL PROGRESS IN THE

In a recent test made by his company, using a "CFR" engine and a brand of lubricating oil intended for gasoline engine lubrication, 83 per cent of the piston ring area became "stuck" after but 15 hours of operation, he said.

Unfortunately, Mr. Kelley could not give complete specifications for lubricating oils that would result in clean Diesel engine operation. However, this problem is receiving the attention of various engine manufacturers and oil companies, as well as the cooperative attention of an S. A. E. research sub-committee. Within a short time, therefore, ideal Diesel lubricating oil specifications should be more generally available.

As with all machinery, there are certain service difficulties that you may encounter when operating automotive Diesels. A few of them mentioned by Mr. Kelley are: Carbonized injectors; air in fuel lines; early piston-ring failure; rapid sludging of crankcase oil; loosening of important connections because of vibration; and even bearing failures in some cases.

But don't get scared. Getting used to a Diesel engine is just about like getting used to a new wife. If you take the trouble to learn in advance just what her particular idiosyncrasies are, and adjust yourself to those conditions, you should experience little difficulty in getting along with her.

Most of the service difficulties that are now being experienced with automotive Diesels, we are told, are due largely to the operator's failure to remember that he is running a Diesel engine, and *not* a gasoline engine. Ignorance, and lack of attention to important small details when operating Diesels, are the things that turn service molehills into mountains.

Let us review a little more intimately some of the difficulties as pointed out by Mr. Kelley. Since fuel pump and injectors are the heart of the Diesel engine, the success or failure of such engines depends principally upon the fuel used and the care and adjustments that are maintained.

As all of us know, an injector should always atomize the fuel evenly (where this is the system used) and not drip at either the beginning or end of injection. If a wet stream, or a series of streams of fuel are injected into the cylinder, combustion is immediately upset, and stuck piston rings, as well as crankcase dilution will invariably result.

This condition may be caused by misalignment of the injector holddown studs, which would tend to distort the injector body, thereby causing the injector needle to bind and not open and close at proper intervals. If the injector stud nuts are not tightened evenly, it will also cause the needle to bind. (ED. NOTE: The foregoing applies to injectors of the closed-pintle, spring-loaded type, see our November issue, which are claimed to be self-cleaning at the nozzle tip, where carbon would have a tendency to collect.)

Low injection pressures will also cause improper atomization, Mr. Kelley said, and therefore the fit of the needle in the nozzle body is of vital importance. If these are interchanged, it might result in a leaky, or else a stuck needle, in those types of engines which use these injectors.

To assure maximum engine performance, it is of course, necessary to eliminate injector failures. This can be done by frequent routine inspections which would correspond with inspections that are now made on gasoline engines, and which are most essential.

Mr. Kelley also pointed out that proper timing of the fuel pump on a Diesel engine is also of great importance, as a slight advance in the pump timing will increase the peak combustion pressures, as well as bearing loads. If an engine is operated with a pump advance of 15 or 20 degrees beyond its normal timing, bearing failures are sure to occur, he said. The way engines are now manufactured, this timing will not (and cannot) slip in the advance direction, and in fact it should not change in either direction of its own accord.

Many operators not familiar with the characteristics of Diesel engines are under the impression that such an advance will increase the power output of the engine, and are tempted to advance this timing gradually until they reach a disastrous point. It is most important, therefore, that the fuel pump timing be maintained at the manufacturer's setting, which is always clearly and properly marked.

It has been pointed out, and is again by Mr. Kelley, that a Diesel engine will *run*, even though the injectors may not be atomizing properly, or the lubricating oil may be sludging badly. However, if it is allowed to continue running in this condition, it will result in stuck piston rings, crankcase dilution, excessive cylinder wear, sticking valves and possibly scored cylinders. Therefore, it is most important that frequent inspections be made to assure maximum performance and economies from a Diesel engine.

Sludging of crankcase oil was just mentioned. All Diesel engines are equipped with lubricating oil

HERE is a fleet of 20 Diesel-powered trucks that operate over 72,000 miles per month. Some of these engines have service records of over 275,000 miles, operating in trucks, hauling capacity loads of 68,000 pounds. The owners are quite enthusiastic about them, from the standpoint of economy and service, we are told.

filters, and these should be cleaned very frequently, as the Diesel engine has a tendency to deposit a heavy sludge in the crankcase, depending somewhat on the oil used. If the oil is continued in use, without removing such sludge and carbon, it will deposit this sediment not only in the engine, but in the air-compressor, vacuum pump, etc., and also in push rods, rocker arms, valve-stems and other close fitting parts, which, of course, will impair engine life and operation.

Water temperature of a Diesel engine is also of importance. Maximum economy and performance are obtained, Mr. Kelley said, when the water jacket temperature is maintained between 170 and 195 degrees, and to maintain this temperature, it is necessary to use very accurate thermostats, preferably of the balanced type, without obstructions at the higher temperatures, or open position.

In some installations, it is also advisable to use either a curtain or a radiator shutter, in addition to the thermostat, to prevent the entire capacity of the radiator from cooling to a very low temperature when descending long grades in cold climates; it is not advisable to cool a hot engine with very cold water, you know.

And now a few words about piston rings for Diesel engines. Mr. Kelley went on record to state that passages in the oil control rings of Diesel engines will clog at intervals almost identical with those on carburetor engines, and that this is a carburetor and Diesel engine *design* problem which has not yet been completely solved. Some oil companies have made real progress in supplying oils that have definitely helped this condition; and a certain piston ring manufacturer has also done some very admirable work in this connection.

Fuel supply systems also require very careful installation and frequent inspection, and should be of adequate size and be absolutely airtight at all connections. Suitable means must be provided to prevent engine vibration from loosening connections and causing leaks, Mr. Kelley said.

Another very important thing to look after is the fuel filter. Most Diesel installations will be noted to have a fuel filter between the main tank and the supply pump, and perhaps another one between the supply pump and the injection pump. It is important to see that these filters are kept *clean* and that there are no restrictions of any kind.

SEVERAL Diesel-powered units are now being operated by Shell Petroleum Corporation, one of which is shown here. At the S.A.E. Transportation Meeting one of their executives was noted to report considerable satisfaction with Diesels thus far; in fact he seemed quite enthusiastic about them.

If you have waded through this report so far, and have become somewhat discouraged with the "headaches" that one is likely to encounter while operating Diesel engines, cheer up! There is another, and far more picturesque side to the story (it will please your pocketbook, too) but we wanted to do the job a bit differently. Certain publications have only published the "sunny" side of the picture, and isn't it just like us to give you "the bitter with the sweet"—? Here are some of the "sugar-coated" observations on Diesels for automotive use, and you'll probably appreciate them a bit more, now that you have had the discouraging side presented to you first.

According to the best of records, there are over 1,200 Diesel-powered trucks and buses operating on the highways of the United States. Some are in new trucks and some have been installed as replacement engines in old vehicles. From what we have been able to learn so far, most of the operators of these vehicles are experiencing remarkable savings, all directly traceable to the (proper) installation of Diesel power. That these operators are rapidly learning to overcome early service difficulties, it goes without saying.

It has been stated by officials of The London General Omnibus Company, who have been operating over 1,000 Diesel engines for some time, that they have purchased their "last" gasoline engine. According to Mr. Kelley, road failures in that fleet occur with gasoline-powered buses at a frequency of approximately 200,000 bus-miles; whereas the Diesel-powered buses are averaging 400,000 bus-miles before experiencing road failures. These mileages are arrived at by taking the total number of miles operated by the entire fleet, and dividing it by the number of road failures experienced.

In order to obtain such good service, London Omnibus has a corps of trained, travelling inspection men, who are constantly watching their engines and never allow them to operate while out of adjustment. Thus we see that when substantial savings are effected by the use of Diesel engines, it should not be considered unreasonable to ask the operator to reinvest part of those savings, in an inspection and adjustment service, as this is undoubtedly much more effective than the present, popular and sometimes indifferent inspection systems employed with a great many gasoline engines.

The Shell Petroleum Company has for some time past been using Diesel-powered trucks in this country, and one of their executives stated (at the S. A. E. meeting) that they were experiencing quite a bit of success with them, and enjoying substantial savings. Other instances can also be pointed out. Some cases we have called to your attention previously in this publication. There are many others, and their "tribe is increasing," as the literary fellows would say.

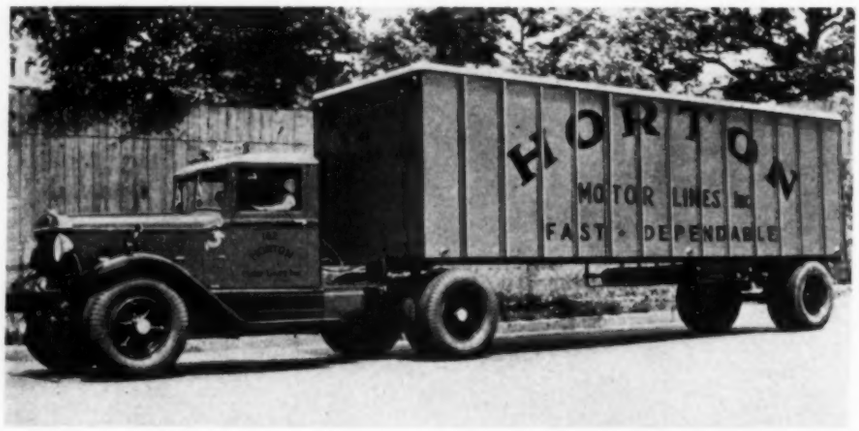
Would you like to have some *new*

(Please turn to next page)

names of fleet operators who are using Diesel engines, to add to the list that we gave you some time ago? Here are a few more: Utah-California Motor Lines, Inc., operating between San Francisco and Salt Lake City; Central New York Freightways, operating between Syracuse and New York City; Silver Fleet Motor Express, operating between Chicago and Louisville; Arrow Transportation Company, operating on the Pacific Coast; C. J. Fayen & Co., operating between New York City and upstate points; Horton Motor Lines, operating between Baltimore, Md. and Greensboro, N. C.; Transcontinental Car Forwarding Company, operating between Akron, Ohio and the Eastern seaboard.

If you'd like more, any of the Diesel engine manufacturers can give them to you, together with all kinds of testimonial letters. That sort of stuff doesn't belong in an article of this kind, but we thought we'd mention a few *names*, just in case you are in doubt.

Of course, as with all new things, the Diesel engine has come in for more than its share of glorification, and has been the recipient of countless bouquets, many of which are unearned, we are told. The many rumors of Diesel-powered passenger cars have thus far, turned out to be "rumors" and nothing else. Many engineers to whom we have talked do not hesitate to voice the opinion that the Diesel-powered passenger car is still very far off, due both to certain shortcomings of Diesels as they have been developed thus far, and also to the exacting demands and fastidious tastes of the car-owning public, with particular reference to smoothness of power, freedom from vibration and simplicity of operation, to say nothing at all of the absence of noise, smoke and odor.



HERE is another Diesel-powered unit in daily service between Baltimore, Md., and Greensboro, N. C., a distance of 370 miles. Average payload is 12 tons. Recorded running time is 9 hours and 15 minutes. The Diesel engine gives 7.2 miles per gallon, we have been told.

While on the subject of "smoke and smell," let us state that most Diesel engineers agree that a *properly adjusted* automotive Diesel engine will neither smoke nor smell. But if you let them get out of adjustment, or burn dirty fuel that will interfere with proper injection operation, you are likely to get plenty of smoke and smell. And you'll get exactly the same thing (although somewhat different in characteristics) when operating an improperly adjusted gasoline engine.

As today's automotive Diesel engines are designed, combustion is quite complete. Since smoke and smell are, obviously, products of *incomplete* combustion, it goes without saying that the more complete the combustion, the less smoke and smell one should get.

Although we do not want to be understood as "taking sides" with either the Diesel or the gasoline-engine exponents, but are simply reporting what we observed at the S. A. E. meeting, it is only fair to state that it has been our privilege to ride on certain Diesel-powered trucks, in which smoke and smell were conspicuous by their absence. On the other hand, we have seen some Diesel jobs that were deliberately mal-adjusted to provide plenty of smoke and smell, but as soon as the proper adjustments were made, smoke and smell were observed to completely (almost) disappear.

THIS is one of the Diesel-powered units mentioned in the article. One of its regular runs is from Akron, Ohio, to Boston, Mass., a distance of about 1,000 miles. Oil is changed at the end of each run, and none is added en route. We do not know what the fuel consumption is, but it's very low, we're told.

And still further were we convinced at the recent Motor Truck Show held in Newark, N. J., in conjunction with the S. A. E. Transportation Meetings. There, one job in particular caught our eye. It was

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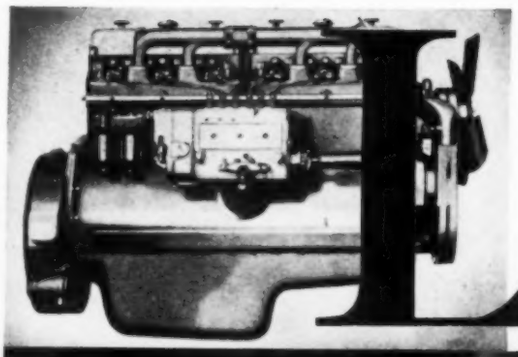
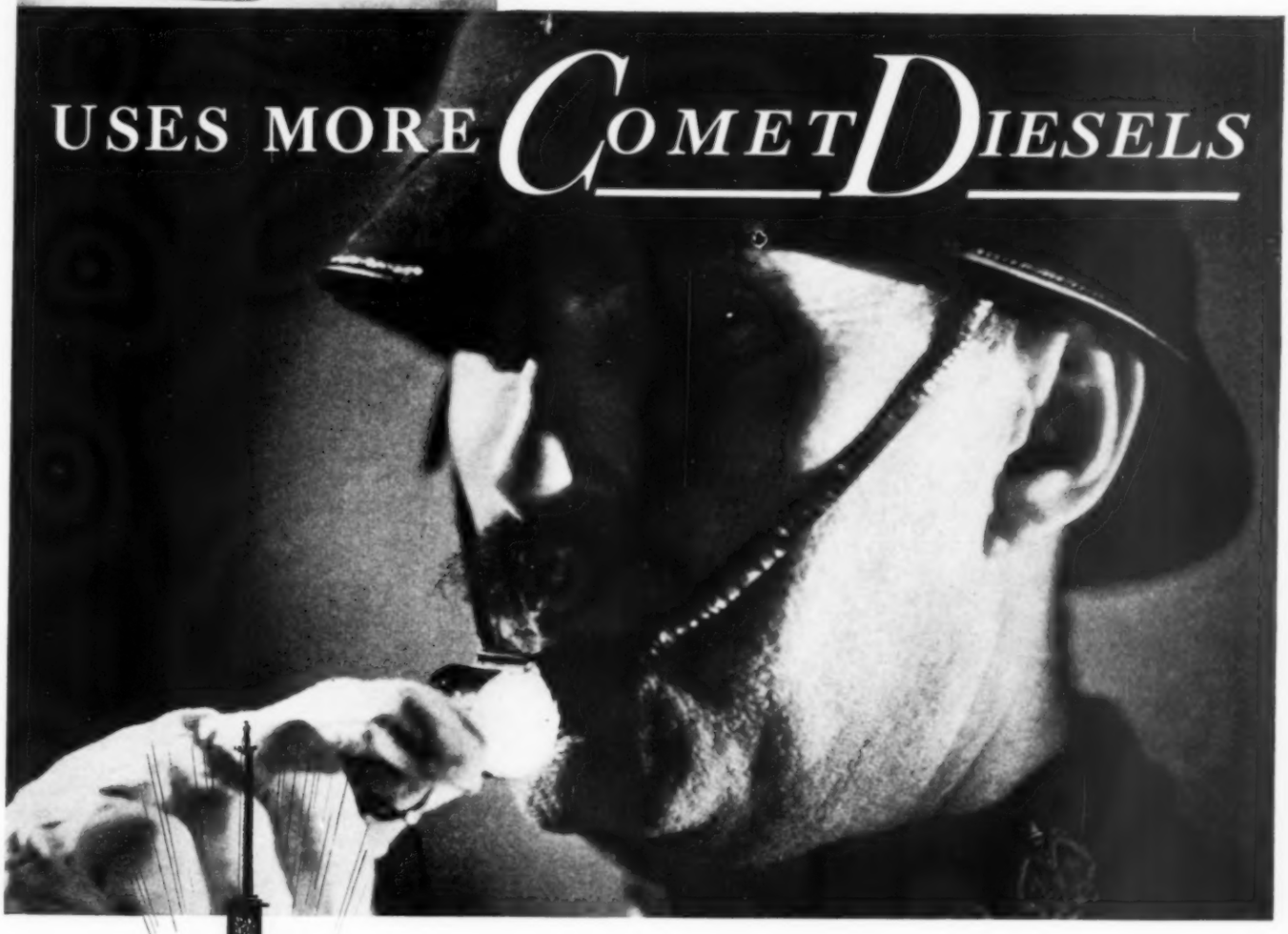


London

USES MORE *Comet* Diesels



In all these Diesel-equipped London coaches and buses, the big majority of the engines are of the *Comet Type*, preferred not only for its marked fuel savings, demonstrated by several years of road tests, but because of its clear exhaust, great smoothness and easy starting.

In America, this *Comet Type* Diesel is now being built exclusively by the Waukesha Motor Company. Compression ignition engine . . . 100 hp. to 140 hp. . . . just the right size for coaches, trucks and tractors, and it's rumored that the research engineers have another size ready. *Write for new Bulletin 1001. Waukesha Motor Company, Waukesha, Wisconsin.*

WAUKESHA ENGINES

TIME

the Weekly Newsmagazine

Says:

that the London Passenger Transport Board of seven, a government bureau, supreme over all London transport lines, has lately been scanning fuel costs of its 6,000 buses and coaches, 850 of which use Diesel engines. The Board announces that all future contracts will be for oil-burning Diesel equipment which it found much less expensive to operate.

• SIX OF THESE UNITS DELIVER BARRELED BEER

—DETROIT · KEEPS · A · CLOSE

THE Tivoli Brewing Company of Detroit, which operates a fleet of forty motor trucks, keeps a very close check on its truck operating costs. And thanks to a carefully organized service and operating department, which at all times is carefully supervised by fleet superintendent Harold J. Doyle, these costs are kept down to very low figures.

For example, although most of the trucks in this fleet of forty units have seen considerable service, some of them employed in long-distance transport approaching the 100,000-figure for miles traveled, the bill for truck repair parts for two recent months was respectively only $30.27 and $31.50.

Again, each of two 3-ton trucks in long distance service, which regularly pull semi-trailers, and at time of a recent interview, respectively had traveled 81,000 miles and 85,687 miles, had new pistons and piston rings installed once, valves ground three times and brakes relined once.

The Tivoli Brewing Company was confronted with three transportation problems in organizing its motor truck fleet. Two types of beer, draught and bottled, are delivered in the metropolitan area of Detroit.

For the delivery of bottled beer in this area, use is made of seven-ten 2-ton trucks equipped with all-steel enclosed bodies, each of which is 12 feet long, 6 feet 2 inches wide, and 4 feet high, and has a sliding door on each side.

To deliver draught beer, six 3-ton trucks are utilized and are equipped with panel-stake bodies which are 14 feet long and are covered with tarpaulins. Three small units of ¾-ton and 1½-ton size are also employed for quick service; special-delivery service as one might call it. Then there are two older type 3-ton and four 5-ton units that are used mainly for hauling supplies.

Since the Tivoli Brewing Company maintains sixteen branches in various cities in Michigan and Ohio, it was also faced with the problem of delivering its product to these branches. This is done with six tractor trucks and trailers, which include the two 3-ton trucks with semi-trailers that are approaching the 100,000 mileage figure already mentioned and four more recently purchased 3½-ton tractor trucks, each of which pulls a semi-trailer and a 4-wheel trailer, equipped with dual pneumatics.

Each of these latter-named outfits make up a train that is 50 feet long, the front semi-trailer being 19 feet long and the rear 4-wheel trailer 16 feet. The overall width of each is 8 feet and the height from ground, 11 feet 6 inches. The two trailers have a capacity of 1,100 cases or 48,000 pounds. All trailers have sliding doors on each side and double doors in the rear.

The longest trip is made to Traverse City, which is some 300 miles away. All long-distance hauling is done at night. The Tivoli Brewing Company is the only brewing concern in Detroit that does its own long-distance hauling, it is claimed.

All the motor trucks are attractively-finished in battleship gray and the word Tivoli sweeps along the sides of the trucks and trailers in enormous red script letters, shaded with yellow and black. On each truck also is a greatly enlarged reproduction of the company's bottle trade-mark also in the same colors as on the bottle labels.

Of course, these trucks, veritable

BREWERY—
CHECK · ON · COSTS ·

CLOSE check on their forty International trucks enables The Tivoli Brewing Company of Detroit, Mich., to quench Detroiters' thirsts swiftly, efficiently and economically. . . . This interesting article, prepared by Edwin A. Hunger as the result of an interview with them, gives the low-down on how they do it.—Editor.

traveling billboards as they are, are among the company's best advertising mediums. To keep the trucks continually spic-and-span in appearance, they are washed three times a week and repainted once a year. The tops of enclosed bodies and trailers are painted with aluminum paint to deflect the sun.

Each driver in the Detroit area is designated as a salesman and is provided with a helper, who, if he shows sales ability, has a pleasing personality and is careful of his appearance, eventually also becomes a salesman. Each crew makes an average of sixty stops and travels about 30 miles a day.

There are also eight district managers, each of whom is in charge of four truck crews. These district managers travel around in company-owned cars and each continually checks up on the customers serviced by the four truck crews under him, especially making careful investigation of any complaints that may be made by customers. All district managers were formerly driver-salesmen.

Both driver-salesmen and their helpers are paid on a salary-and-commission basis and since both share the commission, the tendency is for each to check on the other and prod him on to greater effort and to be courteous and careful in his treatment of customers.

Meetings for driver-salesmen and their helpers are held every Wednesday morning and selling talks are regularly given at these by Fred R. Dolsen, who is vice-president and sales manager. Mr. Doyle, fleet superintendent, also often talks on correct and safe driving practices.

The Tivoli Brewing Company maintains a garage 130 feet by 90 feet in size. Three mechanics are regularly employed, two of them being on duty at night and the third on days. Then, there is a washer who works nights.

The service shop in the garage is very well equipped with full sets of tools, valve grinder, presses, hydraulic jack, electric drills and grinders, battery chargers, various types of gages, wash rack, etc.

There is a big blackboard in the office of the garage on which every truck is listed by number, and spaces are provided by vertical lines for recording a variety of service work that must be regularly done on each truck.

The headings of these columns of data are as follows: 500-mile grease; 1,000-mile grease; oil drain (every 1,500 miles); battery check (every week); motor wash (every 10 days); axles washed (once a month); polish (in summer only).

Each driver must also fill in a daily defect report, and all defects reported are corrected by the mechanics that same night if possible. Space is also provided on the defect report for recording a variety of data on mileages and deliveries and on the back thereof additional space is designated for recording cost figures on fuel and oil consumption, grease, service labor, parts, repair labor and revenue.

Finally, there is a big ledger sheet 13 inches by 16 inches in size for recording data on each truck, on which there is a horizontal space for each month and vertical spaces headed as follows: gas; oil; grease; parts and tires; repair labor, service labor (cleaning,

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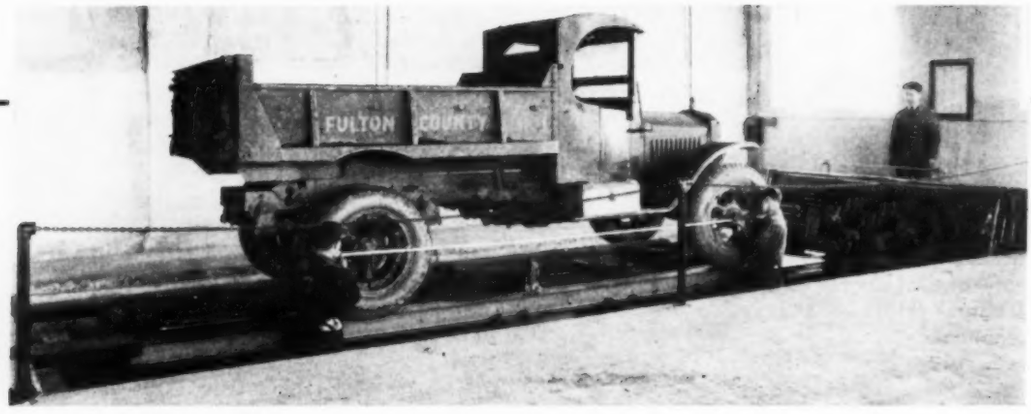
• 17 OF THESE DELIVER BOTTLED BEER



How 85 Fleets Maintain Front-Ends

"WHEEL ALIGNMENT and headlight-testing are two maintenance jobs that we have not perfected in our shop as yet. However, we are checking up on various available equipment and will probably give these better attention in the future, as they are becoming of more importance every day."

The foregoing remark, made by a prominent eastern fleet operator is not exactly typical of fleet operators in general, although it is the opinion of many leaders in automotive circles, that fleet operators are more-or-less indifferent to the increasing importance of these two "preventive" maintenance measures.

As with all things, when we have to prove anything, or if we are the least bit doubtful, we simply turn around and see what fleet maintenance men have to say about it. So, we decided to take up the matter in our Question-of-the-Month Department, and last September we included, as Question No. 60, the subject of "Front-End Maintenance" which took in head-light testing as well as wheel and axle alignment.

The response to Question No. 60 was pretty good, gentlemen; but who is satisfied with being merely pretty good? Only 85 fleet men participated in this questionnaire, and, as is our usual custom, those 85 operators received their typewritten tabulations of all the replies; trade-names and everything! You fellows who did not participate in it will have to be satisfied with the brief resumé that follows.

Those who entertained the belief that fleet men do not get hot-and-bothered about this type of front-end maintenance will undoubtedly be surprised when they see the answers to our first question. In order to start off with a real easy one, we asked: *"Is Wheel Alignment included in your maintenance routine?"* Seventy-two (out of 85) fleet operators replied in the affirmative; only 12 said "No"; and only one did not answer this one. . . . From which we can conclude that the self-styled experts are wrong, and that fleet men *are* bothering their heads about this important phase of preventive maintenance.

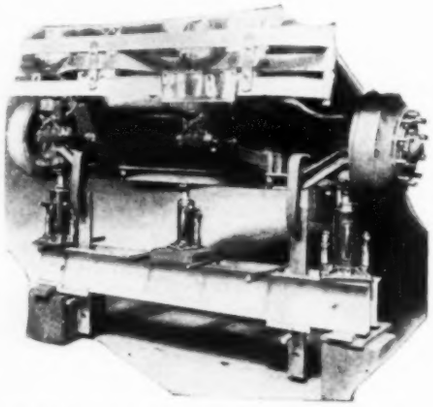
By H. Clay Fischer,
Editor, FLEET OWNER

The next question called for more intense thought. We asked, *"If so, how often are your vehicles checked for front-end geometry?"* . . . In answering this, fourteen operators gave periods based on mileage, the most frequent check-ups being made at 1,000-mile intervals, and the less frequent ones being done at as high as 10,000 miles. If you'd like the average figure among these fourteen operators, it's about 2,600 miles.

Then there were 43 operators who gave time periods for checking-up front-end geometry. These ranged from "every week" to "every year." However, the most frequently mentioned period was "every month"; the next most frequently mentioned period being "every three months." We have not attempted to average this figure, but if you want to, you may—that is, if you have a copy of our typewritten tabulation.

A number of operators reported that front-end geometry is checked up at every inspection period; others at every lubrication period; and still others "when tires wear." But since they failed to state how often they inspected, lubricated, etc., it's difficult for us to pass on to you anything in the way of concrete information in this case.

Getting back to the questionnaire, we find the next question asked, *"Is front-end check-up made with the vehicles loaded or unloaded?"* Only nine operators reported doing this work with the vehicles loaded; while 48 stated that it is done without loads. However, 21 operators reported "Both," which leads us to believe that when trucks are checked up, they are usualy loaded; but when passenger cars are checked, the work is done

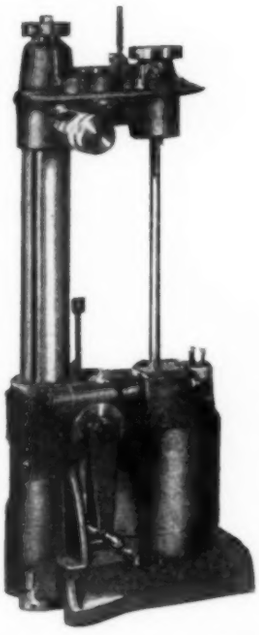


Cold-straightening of front axles is the proper way, according to leading axle metallurgists. Here's how even the biggest job can be done, with proper equipment and a trio of hydraulic jacks.

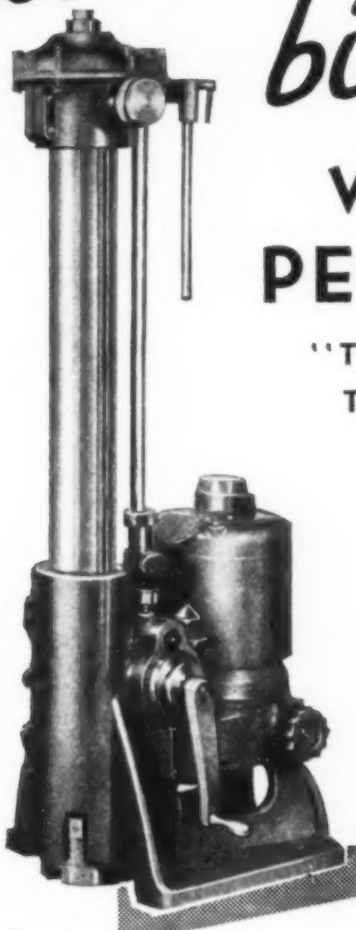
Keep motors sweet and gas bills low

WITH THE PER-FECT-O

"THE BAR WITH THE CATSPAWS"



No. 944 Per-fect-o 2.2" to 4¼" 10" deep



No. 888 Per-fect-o 3½" to 7½" 18" deep

ONE CUT with a Van Norman Per-fect-o Boring Bar leaves the cylinder in perfect shape for smooth, economical performance . . . no honing is necessary . . . and the Per-fect-o is the only bar that will do it. Four patented catspaws not found on any other bar make this performance possible, regardless of cylinder conditions.

Your jobber will be glad to demonstrate the bar . . . will prove to your satisfaction that the Per-fect-o is the fastest, most accurate and most easily operated bar on the market today. Write for illustrated folder showing the Per-fect-o in action. Six models that bore cylinders from 2.2" to 9" in diameter and up to 30" deep.

- One cut gives perfectly finished cylinders.
- No honing.
- Accurate under all conditions.
- Fast, easy to operate.
- Only boring bar with the 4 patented catspaws.
- Six models bore cylinders from 2.2" to 9" diameter, 30" deep.

IT PAYS TO VAN NORMANIZE

VAN NORMAN

VAN NORMAN MACHINE TOOL CO., *Springfield, Mass.*

without passengers in the cars. Seven operators refrained from answering this one.

And now we come to a more intimate question, asking, *"What wheel alignment system, or make of equipment is used for this purpose?"* Ten different systems were mentioned. One of them was mentioned 28 times; another was mentioned 8 times; still another was mentioned four times; another one three times; and six more systems were each mentioned once, accounting for our ten systems in all.

It is not good policy for us to mention the *makes* in articles of this kind. If we did, then there would be no "inducement" for operators to participate in the questionnaire, as they would get all of the "meat" in these articles, anyway. So, we must refrain from mentioning the makes here, but if you want to know what they were, just drop a line to Editor Fischer and include in your letter the questionnaire that is printed in this issue. Then we'll call it square and send you this tabulation in consideration of your future efforts in the "Club." (This offer is made to fleet operators only).

And here is another question that may be considered to reveal a trend in farming-out shop work. We asked, *"Is your wheel alignment work done in your own shop, or is it farmed-out to other shops?"* Believe it or don't, 41 operators reported that they are doing *all* of their own wheel alignment work in their own shops. Twenty-one reported doing some and farming-out some—perhaps the major and difficult jobs. And twenty-three more fleet men reported farming-out all of it.

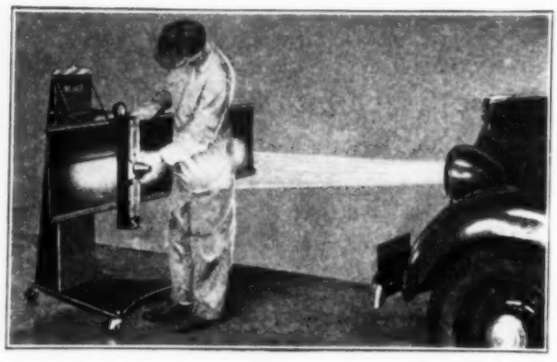
So, the figures are not so death-dealing, and there is still reason to believe that fleet operators are susceptible to doing their own front-end work, especially if they are properly informed as to the availability of low-priced, efficient equipment for the purpose.

In order to "feel out" the sentiment with regard to the above question, we next asked, *"If possible, would you prefer to do your own front-end maintenance work in your own shop?"* Thirty-five of those operators who are not already doing some or all of it in their own shops replied "Yes." And only twenty-two said "No"; the balance not answering this question.

Platform-type of wheel-alignment tester, which gives a "rolling" picture of any misalignment. This is a comparatively recent development and there are several of these now on the market.

And now we begin to get a little less nosey, and more technical. We asked, *"How do you straighten front axles—hot or cold—and in the vehicle, or out of the vehicle?"* Of course, the people who are supposed to *know* the best way of doing this, always caution us never to use heat on front axles, as this changes the molecular structure (there's a pair of fifty-cent words), but still we find that the brothers are using gasoline and acetylene torches, blacksmith's forges, etc. Here are the figures: Only 12 operators report that heat is used; 49 of them use no heat; 10 of them straighten the easy ones cold, and the difficult ones hot; and 14 did not want to be embarrased, so refrained from answering.

Of course, all of us would like to straighten front axles without removing them from the vehicles, but this is not always possible, as only 21 fleet men were able to report "In vehicle." Thirty-two reported "Out of vehicle"; another 19 reported "Both methods"; and 13 did not answer this question.



Headlight testing is something that should be considered more seriously by fleet operators. . . . Here is one of the newest pieces of headlight testing equipment. It uses the well-known photo-electric cell.

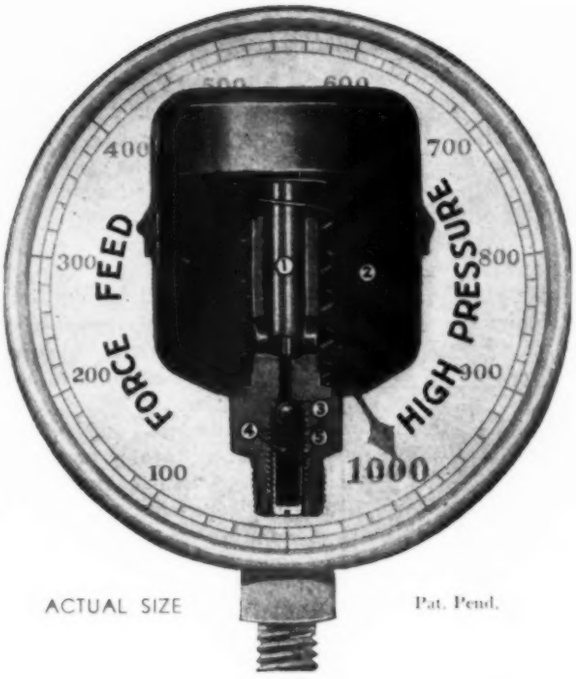
It is only fair to remark, in passing, that there now is available lots of excellent equipment for doing axle straightening jobs without removing them from the vehicles. Good hydraulic jacks play an important part here. With two or three of them, and a set of I-beams, a couple of "sky-hooks" and other odd-shaped clevis-like members, this erstwhile difficult job becomes relatively easy. But don't try to make such equipment yourself. You probably won't use the right type of metal—most of these seem to be steel forgings—and instead of straightening the bent axle, you're likely to put a dent into your "equipment"—and into your pocketbook, too, if time charges mean anything in your particular operation.

And now we take inventory. We next asked, *"What wheel alignment equipment do you now have?"* In the 85 fleets that reported, we find the following equipment: 62 Wheel Aligning Gauges; 29 Caster or Axle Gauges; 19 Spindle Gauges; 20 Tracking Gauges and 1 Turning Radius Gauge. . . . We'll admit that some of this equipment is of the home-made variety; but most of it is not; which proves that fleet men are not averse to purchasing equipment for this work, once they are convinced that it will help to reduce tire costs, prevent accidents, etc., if properly used.

Certain people who have done a lot of research work along wheel and axle alignment lines have often stated that it is first necessary to check for caster before attempting to check for toe-in. So, in order to see what fleet men think of this idea, we asked, *"Is this procedure followed in checking your own vehicles?"* The answers were Yes—38; No—24 and No Answer—23. There seems to be some doubt about this, but that's what the experts tell us, and perhaps it is so, because if the caster is too great, or too little, the whole steering geometry will be upset. And that would n-e-v-e-r do.

Our old friend, the dual pneumatic, was not forgotten in the questionnaire, since we next asked, *"Where dual pneumatics are used, what method do you follow in correcting the wear on inner tires?"* The recom-

ALCO
CHASSIS LUBRICATOR PUMPS LUBRICANT INTO BEARINGS WHILE YOUR VEHICLES TRAVEL THE HIGHWAYS



ACTUAL SIZE Pat. Pend.

Road shocks cause the weighted plunger (No. 1) to force lubricant from the reservoir (No. 2) (which holds 1½ cu. in.) past the check valve (No. 3) into the high pressure chamber (No. 4) from which it is metered by the adjustable metering screw (No. 5) at the rate of 1 to 5 drops every 100 miles, depending upon the adjustment. It is very easily refilled and can be installed in 5 minutes. AND GENERATES UP TO 1000 LBS. PRESSURE.

FOR

- WATER PUMPS
- CLUTCH YOKES
- SHACKLES
- FAN BEARINGS
- STEERING SPINDLES
- SADDLES

ETC.

AUTOS—TRUCKS—TRACTORS

90% SAVING ASSURED

THE ENGINEERING DEPT. OF A PROMINENT AUTO MANUFACTURER REPORTS AS FOLLOWS:

In answer to your inquiry relative to results of tests on your automotive oilers.

The car equipped with your oilers, belonging to the Ajax Rubber Company, travelled 14,800 miles at a rate of 600 miles per day before replenishing supply and at the last report car travelled 18,427 miles.

Various weight oils were used on our experimental car which has run approximately 6000 miles with this installation and device seems to lubricate properly. Both tests were made during very cold, as well as some hot weather.

FORD V-8 WATER PUMP INSTALLATION

WRITE FOR ILLUSTRATED CIRCULAR WHICH CONTAINS FULL COPY OF REPORT SHOWN ABOVE AND INTRODUCTORY OFFER.

LIST PRICE $1.00

MFG. AGT'S. AND DISTRIBUTORS WANTED

- PERMANENT INSTALLATION
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53 W. JACKSON BLVD. CHICAGO, ILL.

mended method is to change the tires around, placing the more worn tire on the *inner* position; 26 operators reporting doing this. Another method which helps to keep the wear even is to inflate the outer tires to a little higher pressure; 14 operators are advocates of this method.

Other operators adopt more heroic measures in curing inner tire wear on dual pneumatics, such as straightening bent axles, etc. Ten of the operators who reported, have no dual tires and the balance reporting having very little trouble with duals—probably because they look after their inflation pressures, change tires around periodically, etc.

And now we come to headlights. We asked point-blank, *"Do you test the headlights of your vehicles?"* Sixty-seven operators reported in the affirmative; 15 operators said "No"; and 3 did not answer this question.

"How often do you test and check headlights?" was the next question. Ten operators gave mileage figures, ranging from 1,000 miles to 10,000 miles, the average figure being about every 4,000 miles. Then too, there were 39 fleet operators who gave time figures, ranging from "every day" to "every year"—the most frequently mentioned period being "every month." The balance of the boys check headlights when drivers complain, at general inspection time, when necessary, etc.

We next asked, *"What equipment do you use to check headlights?"* . . . The time-honored method of focusing the headlights on the garage wall seems to be quite popular, since 28 operators reported indulging in this practice. Thirteen more of them use special alignment boards or screens; several more use charts furnished by the State Motor Vehicle Departments, manufactured headlight-testing machines, "dark rooms", and similar methods. Thirty-four did not answer this one, maintaining what some people call "dignified silence."

And so, gentlemen, that is what *we* have done in the great movement for safety. Before closing the discussion, let us review briefly some of the remarks that were given by fleet operators, in addition to answering our direct questions. Here are a few of the typical and frequently occurring ones:

"Have checked front-end alignment over a long period."

"We developed special tools for front wheel and axle work."

"By looking at tire wear we can usually judge correct caster."

"We should check wheel alignment, but have no equipment."

"Puncture-proof tubes unbalance front wheels and cause shimmy."

"If tires show wear we check even oftener than once a month."

"Small jobs are done in shop; perplexing ones sent out to expert."

"We measure toe-in every 1000 miles; unusual conditions sent out."

"Have very little front wheel and axle trouble."

"Knee-action cars have to be checked very often."

"Trucks run night and day; lights have to be checked daily."

"We have a very much neglected fleet of cars and trucks."

"Have no method of checking, other than observing tire wear."

"This work is mostly done as tires show wear; bent axles farmed out."

"Tire company inspects tires monthly and reports unusual wear."

"Little trouble on duals if inner rear wheels are in line."

"We use the State Inspection (Pa.) as part of our routine."

"We only check for toe-in; all other front axle work farmed out."

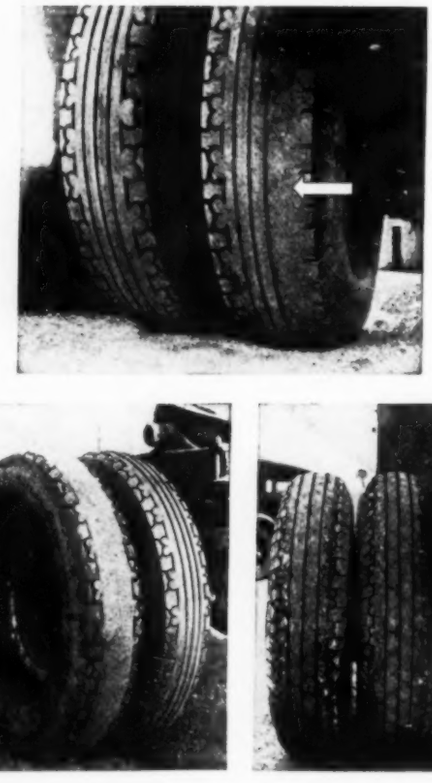
"Our vehicles operate at slow speed in city work; no trouble at all."

"Wheel Alignment and Headlights have not as yet been tackled."

"We only check for caster where excessive tire wear is evident."

"Wheel Alignment not done until tires show uneven wear."

"Have found it best to farm-out major wheel correction jobs."



MOST fleet operators try to correct inner tire wear on dual equipment by changing tires around, placing the worn tire on the inside position, as shown in the top picture. Others try to keep more air pressure in the outside tire of duals. . . . The picture on the left shows the WRONG way of doing it, while the one on the right shows the ideal way of mating duals, if possible. . . . Improper inflation is equally as bad as improper matching, however.

And that, folks, is the story on Front-End Maintenance. We will repeat that these questionnaires are conducted solely for the fleet man's benefit. The information in them is "confidential business" and only those who participate in them are really entitled to the "confidential" summaries which follow them. In these summaries you get *all* the "meat"—tradenames, brands preferred, and everything. So why not start out today and become a regular "member" of our Question-of-the-Month Club? . . . The questionnaire is on page 65 of this issue, and there will be a new one every month. So much for that.

Undoubtedly many fleet opera-

(*Please turn to page* 75)

Uniform Reflector Law is Desirable

(Here are two popular types of standard reflectors)

WITH a critical official eye being directed toward the efficiency of reflectors for motor vehicles in the past few months, and with many states passing laws making use of them compulsory, a new interest has developed in reflectors.

Several states already having such laws have raised their reflector standards and will not grant official approval to any signal unless it meets the rigid standard recommended by the Illuminating Section of the Society of Automotive Engineers. Thus, vehicles having unapproved signals on them are being stopped on the highways by state police, causing no end of inconvenience and expense to drivers and truck owners.

The cause of the furore is due for the most part to efforts of highway departments and motor vehicle commissioners toward reducing accidents on the highways through use of reflectors that provide a maximum of safety and are officially approved.

According to J. E. Eshbaugh, research engineer of the AC Spark Plug company, and an authority on reflector signals, a uniform law on reflectors fashioned after the standards of the Illuminating Engineering Section of the Society of Automotive Engineers will in all likelihood be adopted by all states. "That," says Eshbaugh, "will be the final logical outcome, and it will be in keeping with the objective of the Bureau of Public Roads of the United States Department of Agriculture, which is the promotion of uniform highway laws."

Eshbaugh, who for many years has been engaged in scientific development work on reflectors, says the phenomenal development of the motor vehicle during the past 20 years, bringing with it higher speeds and better roads, has forced upon us the necessity of safety devices. One of these, the reflector, returns a bright warning signal when the headlights from another vehicle are played upon it. It serves as a protection when vehicles have poor or possibly no tail lights at all.

"In developing reflectors," Eshbaugh said, "many factors which have an effect on the efficiency of the device such as fog, rain, road curvatures, hills, temperature, salty seacoast atmosphere, long life, dust, etc., must be taken into consideration. Reflecting glass prisms must maintain their high efficiency indefinitely, and a signal must be visible close-on and at angles as well as at distances of 500 to 1,000 feet."

WHERE REFLECTORS ARE REQUIRED

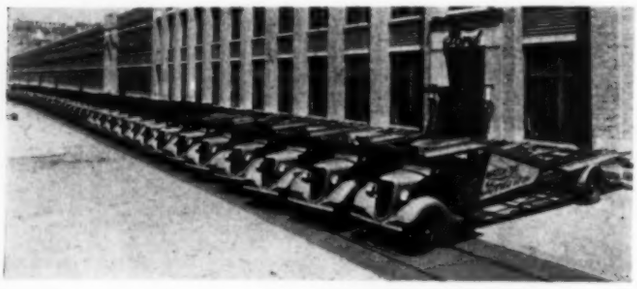
California	Missouri	South Dakota
Connecticut	Montana	Tennessee
Colorado	Nebraska	Texas
Dist. of Columbia	New Hampshire	Utah
Illinois	New Jersey	Vermont
Indiana	New York	Washington
Iowa	New Mexico	Wisconsin
Kansas	North Carolina	Wyoming
Maine	*Ohio	
Massachusetts	Oklahoma	CANADA
Michigan	Oregon	Ontario
Minnesota	*Pennsylvania	Manitoba
Mississippi	Rhode Island	New Brunswick

Here is a list of states having laws requiring reflectors on trucks, buses and trailers. The asterisk denotes states where reflector laws are either pending in the legislature or await the governor's signature.

The candlepower, the visibility straight on and at angles, and the color of reflectors are determined by this ingenious photometric testing device in the AC Spark Plug Company testing laboratory. . . . At 100 feet the beam is played upon the reflector which is rotated at various angles. . . . J. E. Eshbaugh, authority on reflecting devices, is shown in the picture.

Delivers 26,035 Cars in Six Months

WITH its fleet of 42 Ford V-8 automobile-transport trucks (36 of which are shown in the picture), the Automotive Conveying Company of New Jersey, Inc., Cliffside Park, N. J., delivered in Metropolitan New York territory 26,035 of the new Ford V-8 cars assembled at the Ford Edgewater, N. J., branch, traveling 980,000 miles en route, during the first six months of this year.



The Ford V-8 transport fleet comprises 39 two-car capacity trucks and three trucks of three-car capacity. In addition, the company operates five 157-inch Ford V-8 stake trucks for transporting genuine Ford parts.

The average trip mileage of each of the automobile transport units is 53 and the average speed throughout the trip is 35 miles per hour. The average mileage per gallon of gasoline is 10 and the oil is changed every 1,000 miles with no oil added between changes.

The entire fleet is painted vermilion, with lettering in black.

●

A Frank Talk on "What Cost Waste?"

MUCH has been said and written on ways and means to reduce fleet operating costs but there is one big item that must not be overlooked. That item is Waste.

This octopus of the truck operating industry thrives to the tune of $50,000,000 a year and every division of every firm pays its share. Little, insignificant amounts—a few dollars here, a few dollars there—and the damage is done. Small mistakes, carelessness, lack of instruction, indifference, dishonesty—perhaps they are small leaks when looked at separately, but they all add up to that mighty item, Waste.

Suppose the mechanic in charge of a truck fleet has made repairs to a certain truck and nothing is said to the driver of this truck on its first trip out. The result may be (and very often is) a road failure due entirely to lack of instruction, or Waste.

Consider the mechanic who is making repairs and commits an error that is noticed by a fellow worker who says nothing. Or suppose a mechanic does only what he is told to do, makes repairs without making other needed corrections and goes about his job only with the idea of putting in so many hours. In such cases, actual dishonesty or indifference is a huge creator of Waste.

Mechanics, however, are not the only ones to whom Waste may be chargeable. Drivers can do a lot to eliminate waste by remembering that the trucks they operate should not be driven at high speed, especially when a heavy load is being carried. After all, any truck is but a piece of machinery built and maintained by humans, and drivers should not expect it to perform superhuman tasks.

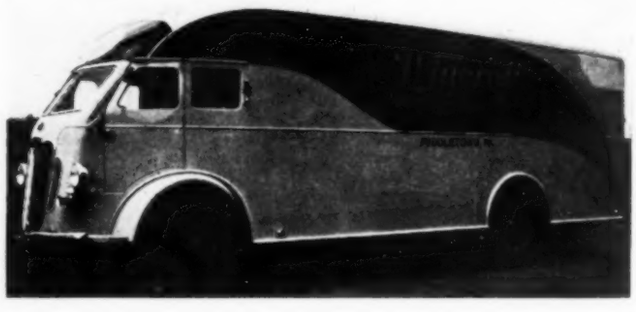
Management, too, is often responsible for exorbitant operating costs due to Waste. Any management that shuts its eye to this form of damage, or adopts the attitude that Waste is too trifling to bother with, is neglecting its duties to the entire organization. No company can afford to accept Waste as a necessary evil and let it go at that. No company can afford to overlook a single item in the operation of its vehicles where Waste has a chance to creep in. It is up to the management to instill into the workers the spirit and will to want to do the job right. Management should set the proper example by watching every penny, and by encouraging every employee to do likewise.

Regardless of the system used to maintain a fleet of trucks or the type of mechanics and drivers employed, it is essential that the ENTIRE PERSONNEL is trained and instructed to the point where everyone is in accord with the desired objective, which is to REDUCE COSTS BY ELIMINATING WASTE.—*The Marquette Lubricator.*

●

Another Unusual Streamlined DeLuxe Van

FLEET men have told us that pictures and descriptions of new body types command unusual interest. Here is one that has recently been completed by The Gerstenslager Company, Wooster, Ohio, for the Wincroft Stove Works, Middletown, Pa.

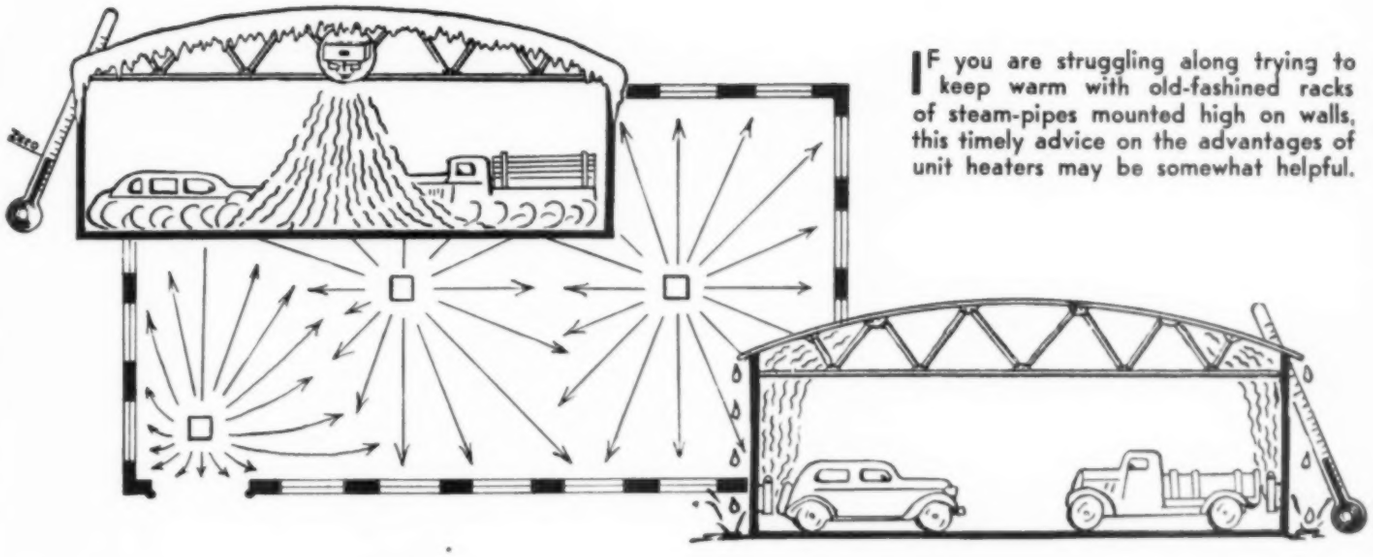


Mounted on a late model Autocar chassis, the "seat-over-engine" cab is constructed to include a 20-inch sleeper compartment at the rear of the driver's seat.

While the overall length of the unit is but 27 feet, 8 inches, the inside dimensions of the body measure 20 feet long, 7 feet, 4 inches wide and 6 feet 8 inches high. The rear opening has a 36-inch tail-gate and a one-piece door above, which hinges up.

Body panels are of composite construction, having one-piece aluminum panel above the belt line, and the bottom panel made in sections. Panels are cemented to ¼-inch three-ply fir veneer, to insulate against heat, to prevent rumble and to hold the panels level. The application of the mouldings to both conceal the seams and to provide an attractive streamlined appearance, may be seen in the picture.

The entire unit is finished in synthetic enamels—red and green, with gold lettering. The usual complement of lighting and reflecting equipment, safety signals, etc., has been incorporated. If you'd like further information address The Gerstenslager Company, Wooster, Ohio, mentioning this publication, if you please.



IF you are struggling along trying to keep warm with old-fashined racks of steam-pipes mounted high on walls, this timely advice on the advantages of unit heaters may be somewhat helpful.

Heating *the* Fleet Shop *is* Important, Too!

By J. M Hancock

Garage Heating Engineer, New York, N. Y.

DUE to the many peculiar conditions encountered in the average fleet garage, the problem of heating this type of building economically has more or less always been one requiring considerable thought, research and experimentation.

Waste and inefficiency are the results of the more or less ordinary methods, due to the fact that the heat is put just where it is not needed and causes an accumulation of excessive temperature overhead—good for melting snow from the roof and serving practically no other purpose.

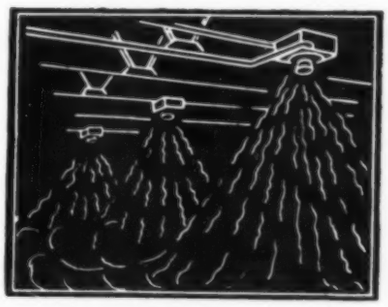
The ideal method is, of course, one which keeps the motors warm and ready to start instantly—the one that requires the least amount of fuel to heat the required zones or areas.

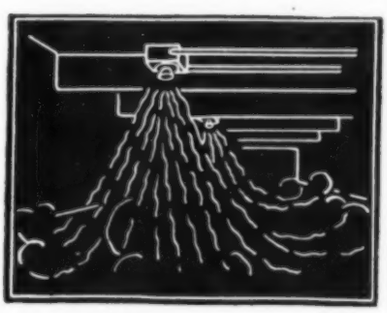
A few typical cases are shown in the sketches above. Heat is not required at the rear end of the cars that are backed up against the wall or in the space overhead; keeping such spaces warm costs money in wasted fuel.

The sketch in the upper left-hand corner shows what properly installed "unit" heaters will do in the way of heating and ventilation. The sketch on the right, on the other hand, portrays the waste that is often found where the usual "steam pipes" are mounted flush against the walls.

Notice that with the unit type of heater, a blast of hot air is directed down where it is needed. And with the old-fashioned rack of steam pipes, most of the heat travels directly upwards, against the walls, and is doing little more than helping to melt the snow off the roof.

The zones or spaces that must be kept properly heated are the aisles and the front and under part of the cars. This cannot, as a rule be accomplished by ordinary heating equipment.





These sketches illustrate one type of "unit heater" that has been developed especially for garage use. It can also be used as a ventilating system in the summer.

An ideal method of heating a garage is suggested in the floor plan above, which in this case consists of two overhead heaters, possessing special characteristics, located above the open aisles and one over the entrance door. They deliver a high velocity conical column of heated air downward and in such a manner that it strikes the floor and rolls along in every direction, as illustrated in the sketches below; thus placing the heat just where it is most needed, and thereby effecting a very substantial reduction in the cost of heating.

It is impossible, however, to stop outside air from entering when a large garage door is opened—more when the wind is blowing and less when it is not—but always enough to chill the entire space, not only immediately surrounding the door but clear back at remote points.

It is therefore most important to heat this in-rush of cold air immediately as it enters the door—at the very point of entrance.

This can not only be accomplished by installing, at the door, a heater specially designed for this purpose, but the cold inrush of air can be used to great advantage of the heating system. The cold air entering comes into instant contact with the high velocity conical column of heated air, giving it added motion which carries this heated air back into the garage, as shown in the two "dark" sketches accompanying this article. Such a system permits the maintain-

(*Please turn to page* 42)

ing of a fuel saving "safe temperature" at night and then quickly brings it up to a comfortable working temperature in the morning, it is claimed.

Modern heating equipment can be conveniently adjusted to the job it is to do. The amount of heat may be reduced, though the air volume and velocity which gives it the penetrating effect remain unchanged; when boiler capacity is limited, it can be adjusted to use just the amount of steam that is available.

Such equipment usually consists of a combined electric and steam directional heater, compact in size and simple in construction. The heat is usually supplied from existing steam lines. A powerful fan driven by a small motor draws a large volume of air through a copper steam or hot-water coil and gives it the high velocity downward direction and penetration. The compactness of such units usually permits all pipe lines to be carried close to the ceiling.

It is therefore not necessary for garages to continue with old-fashioned, expensive and inadequate methods of heating, there now being specially designed equipment made exclusively for the conditions met in the modern garage.

(Editor's Note: There are several makes of "unit-heating" systems on the market. If you'd like more information concerning them, literature, etc., we'll be glad to see that you are supplied without obligation of any kind. Just write to the Editor and ask for "further information on unit heaters." . . . . We believe you'll find it interesting, and hope that it will help you solve some of your heating problems.—H. C. F.)

●

Trucks and Busses Too Heavy, Says Bohn

"ONE of the biggest sources of economic waste in this country is the tremendous discrepancy between the pay-load and the weight of the vehicle used for truck and bus transportation today," says Charles B. Bohn—well-known Detroit metallurgist.

"There are thousands upon thousands of vehicles operating in this country and abroad which weigh from one thousand to five thousand pounds more than is necessary in the light of present-day knowledge of materials," states Mr. Bohn. "The cost of needlessly transporting all of this surplus weight over the highways is incalculable.

"Even if the design of the present-day truck or bus were exactly duplicated with lighter methods of construction and lighter but equally strong metals, the economic saving would be tremendous. It must be remembered, however, that where the weight is materially reduced, it is also possible to reduce the amount of power required for the vehicle and consequently, to further cut the weight of the powerplant and greatly increase its economy of operation. If better performance is desired, the same size engine used in the lighter weight vehicle would give an increased ratio of power-to-weight and consequently would greatly benefit performance.

"This problem of strength with light weight is a challenge to the engineer and designer and no longer to the metallurgist. The metallurgist stands ready to supply the materials. They are here now. We have aluminum alloys, for example, which are capable of providing all of the strength required to meet the highest demands for safety, durability and strength. To use these modern materials, however, means a new conception on the part of engineers and designers as well as manufacturers. It is the purchaser and user of the truck and bus who foots the bill.

"At the present time there are very few of the new light-weight trucks and busses available although they are beginning to come. When the operator realizes that he is paying good hard cash to needlessly drag over the highways tons of iron and steel castings, forgings and stampings at the expense of his pay load, whether it be passengers or freight, he is going to rebel and in fact the movement is already under way. The savings over the next ten years due to the introduction of the new modern busses and trucks will be tremendous, but this movement should be even more rapidly accelerated by enlightened efforts of engineers and manufacturers."

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Many New Police Fleets Reported

POLICE throughout the nation are better equipped to meet the challenges of criminals this year, as the result of general business improvement.

Economic recovery in most sections has meant increased tax collections. States and municipalities have more money to spend. Many of them are investing part of their improved incomes in better equipment for their law-enforcement agencies.

During the depth of the depression, the police in numerous cities were forced to fight gangsters and hoodlums with antiquated equipment. Often they had to use old, worn-out automobiles to pursue criminals in the latest high-powered cars.

Returning prosperity has remedied this condition. In the past year city after city has replaced its old police cars with the latest model motor equipment. Some of the larger cities have purchased hundreds of new cars for radio cruisers. Even the smaller towns and villages have traded their five and six-year-old cars in on the latest model automobiles.

The average police department of today is a modern, motorized unit, closely tied together by a central radio broadcasting station. Police don't walk beats any more. They ride in radio patrol cars. They are motorists, not pedestrians, and if they have flat feet, it's because they're pressing their pedal extremities out on brakes and accelerators—not sidewalks.

Automobile manufacturers in Detroit report the biggest market for police cars in years. One company says that it has more than doubled its police business during the past twelve months. Fifty-six police departments added new cars of that make to their equipment this year and more than 200 law-enforcement agencies in the United States are using them.

The police departments are not only buying more new cars, but in many instances they are taking the extra precaution to order armored cars for dangerous criminal pursuit work. Police aren't taking the chances they formerly did. They have learned how to make armored cars do their "gambling-with death" for them.

The latest armored cars available for such work have bullet-resisting windshields, gun ports, bullet-resisting side wings, radiator guards and tire guards. The dash, cowl, headboard, toeboard and both front door panels are lined with lightweight armor steel.

Recent tests show that the glass and steel in these armored cars will stop a bullet from a .45 calibre submachine gun, as well as from many other types of guns commonly used by gangsters.

Eliminate This | This Winter!

BEING a "How-To-Do-It" article which offers you some timely points on how to eliminate hard-starting among the vehicles in your fleet this coming winter. . . . While we may know all the facts set forth, we'll wager that you'll find this article somewhat refreshing.—H. C. F.

By B. J. Haskins,

Vice-Pres. in Charge of Engineering, Joseph Weidenhoff, Inc., Chicago, Ill.

THE cold weather that is in the offing will soon bring in the cars, trucks and busses whose drivers will offer the almost universal complaint, "She is hard to start boss; sometimes she just refuses to start!"

And the universal answer is "let's change the battery or put on a new coil." True in most cases when the car gets to the shop, the battery *is* dead and there is *no* spark.

But in most cases, at least, the trouble was *not* in the battery, the coil or ignition.

If we analyze the problem we will have to look a little further than the battery and ignition if we are going to get to the seat of the trouble.

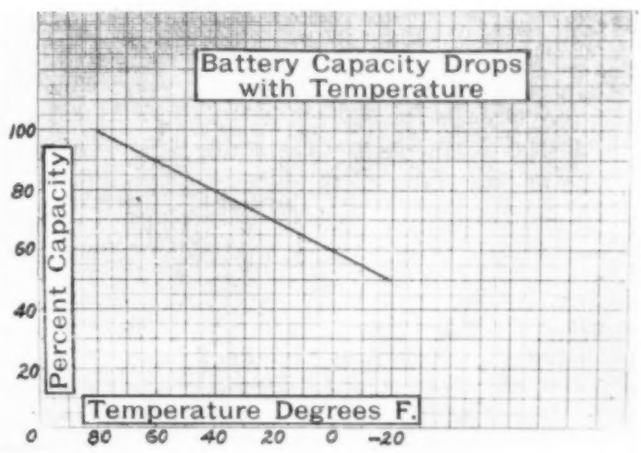
Let us take a normal engine in normal weather conditions. (Meaning temperatures of from 50 degrees F. or above.) The valves are free and the pistons and bearings are free to operate without undue friction, because the oil in the crankcase is suitable for the above temperatures. Consequently when the starter switch is closed, the engine is turned over briskly, the valve stems are free and the valves close tightly.

The result is that the normal engine with a compression ratio of 5 to 1, due to the fast turning, draws in a full charge of properly mixed air and gas. This is compressed to around a hundred pounds or more. And the heat of compression raises the temperature to somewhat between 400 and 500 degrees F. above intake temperature.

With these temperatures it does not take much in the way of a spark to start the engine.

Now if we check back on a *cold* morning we find, in the first place, that the battery is less efficient on account of its low temperature. We also find that the heavy oil puts an extremely heavy load on the starter. And, most important of all, the cold oil on the valve stems does not allow the valves to close quickly enough.

The net result is that even though the starter cranks the engine over slowly, there is not speed enough to draw in a proper charge of gas. And since the valves are not tight, we have no compression, and without compression we have not heated the gas to the point where it will ignite, regardless of how much spark we have. And if it does ignite the resultant heat of combustion is not sufficient to develop power enough to keep the engine turning over.



It is quite a well-known fact that the normal temperature of the gasoline-air mixture, before ignition, is several hundred degrees above intake temperature, so you can readily figure that the matter of 50 degrees F. lower temperature in a cold garage is not enough to cause an engine to fail to start if it is in good working condition.

Unless you have the right kind of oil in the

(*Please turn to page* 44)

crankcase and have all valves working so as to get good compression, there is no battery or ignition system that will start the engine. It may be that the battery has been ruined by trying to operate a car in this condition.

Thus, before a new battery is installed, the correct grade of oil should be put in the crankcase and some kind of overhead oil should be put into the engine through the spark plug holes or through the intake manifold to clean up the valve stems. Then analyze the engine for compression and vacuum to make sure that it is in operating condition.

Then and only then should a new battery, coil or whatever else may be needed—be installed. In other words, an oil change or an overhead lubricant is more apt to be needed than a new battery, provided the battery has not died of old age or been overworked trying to do the impossible.

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Executive Sees Value of Safety Glass

THE value of safety glass in automobile accidents was demonstrated most dramatically and without a moment's warning to a member of the National Safety Council, Inc., Chicago, according to a letter received by John D. Biggers, president of the Libbey-Owens-Ford Glass Company, Toledo, from W. H. Cameron, managing director of the N. S. C.

"One of the member companies of the National Safety Council has presented to me by letter the harrowing details of an automobile accident in which three of our friends were involved," writes Mr. Cameron.

"This was another case of an automobile traveling at a very high rate of speed, attempting to pass our member's car on the crest of a hill as well as a loaded motor truck. The accident resulted in very serious injuries. The following is an exact quotation of the report sent me of one of the details of the accident:

" 'I saw both cars last Tuesday and they are complete wrecks. It certainly was a fine demonstration of the value of safety glass. The glass in our friend's car was shattered into a million pieces, but the glass held together, thus preventing the two persons in the front seat from being cut to pieces.'

"I am naturally pleased," continues Mr. Cameron, "to have this one more proof of your valiant efforts to protect the lives of automobilists through the use of safety glass all around the car,"

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IHC Publishes Booklet on Safe Driving

THROUGH what probably has set an all-time record for reprintings, millions of Americans have read in newspapers and periodicals the startling article from *Reader's Digest* entitled "—And Sudden Death," by J. C. Furnas. A masterpiece of stark, unrelenting realism, recounting to the last terrifying detail the horror and suffering witnessed every day at scenes of highway smash-ups, the article has, by sheer shock, aroused the public conscience to the need for more careful driving.

As if timed for the receptive mood created by Mr. Furnas' article, a 64-page, pocket-size booklet entitled "I Drive Safely" has been published by the International Harvester Company for free distribution. It is available to all drivers of motor vehicles sufficiently interested in improving their driving to apply for copies. Hundreds of motor truck fleet operators already have applied to the Company, 606 South Michigan Avenue, Chicago, for copies for distribution to their drivers.

"I Drive Safely," a book of instruction for drivers of trucks and buses, is attractive in typography and illustrations, with terse treatment of its subject matter arranged under chaper headings for quick reference and review. It leaves nothing unsaid for anyone seriously desiring to contribute to street and highway safety.

Pointedly illustrated for a ready grasp of safe driving fundamentals, some of the subjects treated are: Speed, brakes, hilly roads, carbon monoxide, rules of the road, railroad crossings, safety loading factors, steering, tires, congested traffic, lubrication, slippery roads, vision, mechanical equipment, lights, pedestrians, garage accident hazards, and miscellaneous safety factors to which a separate chapter is devoted. Proper maintenance of the motor vehicle is also outlined in non-technical language.

Dedicated to the large number of truck and bus drivers who have exceptional non-accident records, a good many of these drivers are mentioned by name together with accounts of their driving records.

Publication of this educational booklet as an aid to safety campaigns conducted both by communities and private fleet operators was suggested by International Harvester employes whose objective is the elimination of industrial accidents and whose cooperative efforts have brought about an outstanding reduction in such accidents.

Among the early applicants for supplies of the booklet have been a number of police departments who plan to distribute the booklets in the interests of safer driving.

While the supply lasts, we will be glad to get copies for you. Just write to The Editor, FLEET OWNER, 90 West Street, and state how many you can use. . . . They're free, without obligation of any kind; purely in the interests of safer operation.

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Morale of Salesmen, Fleet Equipment Related

WHILE it is axiomatic that the morale of a company's sales representatives has a direct bearing upon that company's business, experience of executives has only recently begun to demonstrate that salesmen's morale is very definitely associated with the type of motor fleet equipment operated by the salesmen.

A case in point is that of the Buffalo Community Laundry Company, of Buffalo, N. Y., which recently replaced all former trucks with a fleet of nine Ford V-8 panel deliveries.

"One very definite thing that we have noticed since our purchase of the fleet is a great improvement in the morale of our salesmen," said R. E. Driscoll, vice-president of the company. "Now that they no longer have to nurse a heavy truck through the streets, they suffer less from fatigue and consequently, they are in a better frame of mind to approach customers.

"Also, the new trucks facilitate quicker pick-ups and deliveries, giving the salesmen more time to look up new business. While we have not been operating the fleet very long, we have already noticed a decrease in the consumption of gasoline and oil, despite the fact that the new units are not yet broken in fully."

FWD Offers New Snow-Removal Trucks

THE Four Wheel Drive Auto Company, Clintonville, Wisconsin, is introducing an improved line of snow-removal trucks for the winter of 1935-36, according to the recent announcement by Walter A. Olen, president and general manager.

Many new improvements have been made in the various models to increase their safety and dependability, it is stated. Primary of these are the safety measures taken to prevent the presence of carbon monoxide in the cabs of the trucks during operation.

Recent tests made to determine the reasons for the presence of dangerous proportions of carbon monoxide within the body of a truck showed one or more of the following factors to be the cause: A leak in the exhaust system; low combustion efficiency which causes an excessive proportion of carbon monoxide in the exhaust gases; trailing eddy currents; and openings in the floor-boards or other portions of the body.

These factors tend to be particularly dangerous during snow plowing. Here, a truck is often required to work almost up to its peak of power, at slow speeds with the cab windows and ventilators closed tightly for warmth. Under these conditions, gases from a leaky exhaust system, or gases drawn from the muffler tail-pipe by trailing eddy currents, tend to enter the cab through any openings in the floor-boards or dash. If the motor of the truck is not working properly (with a low combustion efficiency), this gas will contain a dangerous and perhaps fatal amount of carbon monoxide.

Fully aware of these dangers, the FWD Company has conducted tests on all models and as a result are employing a threefold line of defense against this menace.

Tight exhaust lines are secured through the use of a three-piece manifold with expansion joints between the middle and two end sections. The joints compensate for the differences in expansion between the manifold and cylinder block which occur alternately each time the motor heats up and cools off. This compensation for expansion differences lessens the high strains built up in the manifold and manifold gaskets which otherwise cause them to warp or crack, allowing exhaust gases to leak out. A change has also been made in the joint between the manifold and exhaust pipe to eliminate gas leaks at this point.

How FWD checks against carbon monoxide in truck cabs. This view shows H. B. Dodge (left), Chief Engineer for FWD, adjusting the carbon monoxide detector before placing it in the cab for test.

The next preventive measure is a thorough check and adjustment of the ignition and carburetion systems of each truck in order to attain the proper combustion efficiency of the motor. A test for combustion efficiency and percentage of carbon monoxide in the exhaust gases was recently made of FWD trucks picked at random from those being road-tested at the factory. The combustion efficiency of each unit was found to be high and the percentage of carbon monoxide in the exhaust gas very low, the makers state.

The third step in the precaution against carbon monoxide is the installation of gas-tight cabs and the thorough check of each with a continuous carbon monoxide detector. All of the new cabs are closed tightly around the pedal opening, control set and holes in the dash where the wiring enters. The toe boards are reinforced with steel plates to prevent breaking and splitting after long time service.

All of the models are now equipped with aluminum pistons. This change increases the governed speed 250 R. P. M. or about 12% with a correspond-

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• NEWS *of the* TRUCK INDUSTRY •

Newark Truck Show Huge Success

THE Second Annual Motor Truck Show, held in Newark, N. J. during the last few days of October was very successful, from any standpoint you might look at it. . . . More than forty exhibitors displayed trucks, engines and accessories, the value of which was said to exceed one and one-half million dollars. . . . And in spite of the inclement weather experienced, attendance was very heavy, especially in the evenings. . . . The Motor Truck Association of New Jersey, and the Society of Automotive Engineers, who sponsored this event, are to be complimented, and we feel safe in saying that all fleet men can now look forward to the Newark Truck Show as an annual event.

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Truck Displays at N. Y. Auto Show

THE 1934 Automobile Show at New York will long be remembered because of the unusually elaborate commercial vehicle displays. While these were comparatively few in number, the taste and colorful exhibits made up for the quantity. . . . The following truck makers were there: Chevrolet, Dodge, Reo, Willys and White. White exhibited its striking streamlining, designed by Count Sakhnoffsky, in a panel delivery job finished in dark blue. A White 704 Chassis was also on display. Full ranges of models were shown by Chevrolet, Dodge and Reo. . . . Also of particular interest were the Diesel engine displays, by Buda, Hercules and Waukesha. . . . The much-discussed Auburn passenger car with Diesel power materialized in the form of a 9-passenger "airport" bus. . . . A new fuel-pump for Diesels was also shown, called the "Federal."

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Ford Show in N. Y. Well Attended

THE Annual "Ford Show" was held in New York City at the Hotel Astor, during Automobile Show Week, November 2nd to 9th. . . . As with its predecessors, it was very well attended and had many novel exhibits. . . . The new Lincoln Zephyr was exhibited there, for the first time, and was the center of attraction. . . . A complete display of the entire 1936 line of Ford passenger cars, commercials and truck units was also shown.

Hercules Motors' New Factory

THE establishment of a branch factory at Muskegon, Mich., is announced by Hercules Motors Corporation, Canton, Ohio. The plant they will occupy is the one formerly used by the Clarke Sanding Machine Company. Machinery and equipment are now being installed and operations will be started at the earliest possible moment. . . . It is planned to produce much of the material used in Hercules engines, at Muskegon; final assembly and testing, however, will continue at the main plant in Canton.

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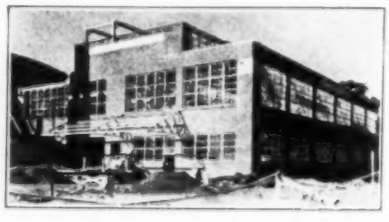
New Addition to Sunnen Factory

A NEW addition to the Sunnen factory at St. Louis, Mo., recently completed, will double the size of it. . . . The addition was made necessary by the increased demand for Sunnen engine reconditioning equipment. It will house the offices, experimental garage, engineering and die-making departments. . . . The accompanying picture is self-explana-



tory. It reflects the fact that fleet operators and independent repair shops, as well as car dealers, are indicating new confidence and are "saying it with orders." . . . Our best wishes to you, Mr. Sunnen!

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Champion Starts Expansion Program

A MAJOR plant expansion is announced by Champion Spark Plug Company, Toledo, Ohio, which will involve all manufacturing departments. . . . Construction work has been started on an addition to the main factory building, which will increase production capacity by well over 7,000,000 spark plugs per year. . . . The new structure will be 60 x 140 feet, six stories high, providing more than 50,000 square feet of additional floor space.

Federal's Silver Anniversary

DEALERS and salesmen, representing Federal Motor Truck Company, from all parts of the country, assembled in Detroit last month to celebrate the Company's Silver Anniversary Convention. . . . A feature of the convention was the introduction of the new Federal ¾ to 1-ton truck for 1936, and also the launching of the "Red Circle Club"—an entirely new retail sales activity. . . . Martin L. Pulcher, president, handled the mechanical meetings held at the factory, and J. F. Bowman, vice-president in charge of sales, supervised the marketing and sales sessions.

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Logan Gear Offers Brake Device

NEGOTIATIONS have just been concluded whereby Logan Gear Company, Toledo, Ohio, begins immediate production and sale of a new hydraulic device for equalizing mechanical brakes and for bringing hydraulic brake action at modest cost to old or new cars and trucks now equipped with mechanical brakes. . . . The device is known as "Vickers Hydraulic Brake Equalizer" and the first showing will be made at the Joint Trade Show, Atlantic City, N. J. . . . Complete details are not available at this time, but we'll try to get them in time for next month's issue.

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Daniels Supervises FWD Eastern Sales

APPOINTMENT is announced by R. H. Schmidt, general sales manager of the Four Wheel Drive Auto Company, Clintonville, Wis., of H. M. Daniels as supervisor of the new consolidated eastern sales division. . . . A. F. Waterland was also appointed manager of the newly established FWD Philadelphia branch. . . . Daniels, the new eastern sales supervisor, has been manager of the New York branch of FWD for over 12 years. . . . Waterland, prior to his new appointment, was district sales representative of FWD, with headquarters at Harrisburg, Pa.

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Simplex Buys New Plant

PURCHASE of a new, larger and more modern manufacturing plant is announced by Simplex Products Corporation, Cleveland, Ohio, makers of Simplex Molium piston rings and other products. . . . The new plant is located on a two-acre plot at 3830 Kelley Avenue, and the building is declared to be one of the most modern of its type in Cleveland. . . . Simplex will move into the new quarters during December, according to Archie H. Knapp, sales promotion manager.

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N.R.D.G.A. Annual Convention

THE 25th Annual Convention of the National Retail Dry Goods Association, marking the silver anniversary of an organization which includes in its membership more than 5,600 department, dry goods and specialty stores throughout the United States, will be held in New York at the Hotel Pennsylvania, January 20th to 24th, 1936, it was recently announced.

Stutz Re-Announces "Pak-Age-Car"

A NEW announcement of the Stutz "Pak-Age-Car" has recently been made by The Stutz Motor Car Company of America, Inc., Indianapolis, Ind. Fleet men will recall that this vehicle was formally announced a few years ago, but for some reason or other, production and general distribution of it did not seem to materialize.

"It is not a motor truck, but a specialty vehicle designed solely for industries engaged in the frequent-stop, house-to-house delivery of merchandise," the announcement states. "In the Pak-Age-Car, Stutz has not made an attempt to adapt a conventional truck or passenger car chassis to delivery service, but in conjunction with industries engaged in house-to-house delivery, has developed an attractive and economical vehicle specifically for this service," it is further quoted from the announcement.

Since the ratio of useful-load to dead-vehicle-weight is rather high in this new unit, low gasoline and oil consumption, minimum tire wear and mechanical stability are promised by the makers. As the illustration shows, the Pak-Age-Car is of the "stand-and-drive" type, with wide doors and unobstructed floor space. Because this type of construction permits the driver to perform his duties with less expenditure of personal energy, the makers claim that this vehicle will provide a material speeding-up of delivery, lower operating costs, and more satisfied driver-personnel.

The feature of the new Pak-Age-Car is its replaceable power unit, which the manufacturers term the "mechanical horse." Built into the power unit are the engine and all its accessories, the clutch, the transmission, and the final drive. All are assembled as a unit, in conjunction with the rear springs, hubs, wheels, service brakes and tires.

When necessary, the power unit complete can be readily removed, and a spare power unit installed in short order, it is claimed. By this method the need for tying up the entire vehicle for mechanical inspection and/or overhaul is eliminated. In cases of emergency, the exchange can even be made on the street, with a minimum loss of time and without having to enter the vehicle or disturb the load, factory engineers state. Thus, where a fleet of Pak-Age-Cars is operated and one or two spare power units are kept on hand, continuous operation of the fleet can reasonably be assured and the investment in spare vehicles can be held to a minimum.

On the other hand, the makers point out, it is not necessary to remove the mechanical unit from the vehicle in order to work on it, since there is ample room around it for making all ordinary adjustments and running repairs.

In addition to the "mechanical horse" feature, independent suspension on all four wheels is found on the new vehicle, which the manufacturers claim will result in a minimum of breakage or other damage to merchandise carried.

The power-plant consists of a small 4-cylinder Hercules engine, equipped with full starting equipment and a special ventilated and voltage-controlled generator by Delco-Remy, which, it is claimed, will keep the battery charged even with an excessive amount of idling.

Other units that go to make up the "mechanical horse" include Borg & Beck clutch designed for multi-stop service and Warner-Gear transmission. Steering is by means of a Ross cam-and-lever gear and Timken roller bearings are used throughout the construction. With the exception of such stand-

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TO REPLACE DOBBIN?

THE makers of this new unit predict that it will not only replace the horse-drawn vehicle, but will surpass it in economy of operation, convenience and efficiency . . . Of particular significance is the statement that ". . . it is designed to sell for approximately the same price as a horse, wagon and set of harness" . . . It should appeal to those fleet operators who are using "house-to-house" vehicles, as well as horse-drawn units.

FWD Offers Snow-Removal Trucks

(*Continued from page* 45)

ing increase in speed and horsepower, it is claimed. The increased speed makes possible faster time in clearing lightly covered stretches of highway. The increased power is applied to the four driving wheels, of course.

The frames of several models have been strengthened to increase their capacity for standing the thrust of bucking heavy snow. Drop frames of 7⅞" width have been adopted as standard equipment on the HS series, 1½ ton trucks. The new frames are 35.5% stronger and 5" lower than the old type. The H6, HH6 and the Maintainer series now have 7" frames, about 25% stronger than formerly used.

The Utility series in the 3½-5 ton range have received special attention in increased efficiency for snow removal work. The front axle ball and socket and the front axle shaft cage ring have been increased in size. This is a definite structural improvement, the makers state, particularly for widening work where the truck is pulling hard with the front wheels at an angle towards the snow bank. Axle ring gears are now fastened to the differential housing by twice the number of bolts, thus materially increasing the strength of this assembly.

Other improvements in this series include: four-wheel, booster-operated hydraulic brakes; larger propeller shaft joints; thermostatic water flow controls; and new square type of rear axle housings which make possible the use of the same rear axle assembly for both single and dual tires.

The M series now includes the M-10, 10 ton truck, as a standard model. The M-10, largest four wheel truck in the FWD line, has a 198 horsepower motor, oversize transmission and axle shafts which make this unit especially adaptable for the heaviest kinds of snow removal work.

The Company is offering a complete and fully illustrated booklet entitled, "The Snow-Removal Problem." This is virtually a text-book on the subject and should be found interesting to city, county and state highway departments, bus operators, etc. . . . For your free copy address The FWD Auto Co., Clintonville, Wis. Mention of FLEET OWNER will help to speed up the service.

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Stutz Re-Announces "Pak-Age-Car"

(*Continued from page* 47)

ardized mechanical units as are usually purchased on the outside, the entire vehicle is built in the plant of the Stutz Company at Indianapolis, the announcement states.

The payload space of the new Pak-Age-Car can be equipped with racks, suitable for carrying and conveniently handling any type of merchandise which calls for house-to-house delivery. It has been designed especially for the use of laundries, dry-cleaners, bakers, dairies, grocers, drug stores, linen supply houses, electrical supply houses, dry goods merchants, department stores and other classes of service employing light city-delivery vehicles.

In making their announcement of the new Pak-Age-Car, Stutz factory officials made the following interesting statement: "The Pak-Age-Car is designed not only to replace conventional gasoline and electric vehicles in delivery service, but even to surpass the horse-drawn vehicle in economy of operation, convenience of stopping and starting, and in facilitating quick exit and entrance of the operator. It is designed to sell for approximately the same price as a horse, wagon and set of harness, and to be even more economical than a horse-drawn unit in the cost of operation and maintenance."

Further details are not available at this writing, but if you'd like a set of interesting literature covering the new Pak-Age-Car, this can be obtained by addressing Stutz Motor Car Company of America, Inc., Indianapolis, Ind. . . . Mention of FLEET OWNER will help to identify the source of your inquiry and will speed up the service.

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Look to Mains as Well as Rods

By C. L. Miller, Mechanic,
Borden's Produce Co., Houston, Texas.

WHEN rod-bearings are fractured, it is a good sign that the main bearings also need attention. We believe that the correct way is to pull the motor down, check the shaft and mains, and then replace all bearings with correct clearances.

The writer does not consider it correct to try to do a precision job like this in a couple of hours, and believes that replaceable bearings are a makeshift, do poor jobs and use less labor. A complete job or nothing, is his opinion. It is impossible to slip a bearing in place and be assured of the correct fit.

In many cases where cast-iron pistons are used, we find that high-speed driving will tend to "hinge" the lower end of the connecting-rod, causing bearing fractures.

Of course, we have every set of rods aligned before assembling into the motors, and we find that practically 100 per cent of them require straightening. We prefer the type of rod-straightening fixture that works down on the rod—as low as possible.

Our source of supply on replacement connecting-rods and bearings is the automotive jobber. We specify the make when ordering them . . . Our fleet consists of 30 trucks and 7 passenger cars.

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Defective Brakes Greatest Danger

DEFECTIVE brakes constitute the greatest danger to safe driving, according to a study of statistics compiled by the Hudson Motor Car Company from reports of cars brought to service stations of dealers during the nation-wide Safety Month Compaign conducted by Hudson during the month of August. W. R. Tracy, Vice-President in charge of Sales, reports the following results of the survey:

"Next in order among defects found in cars came lights either out of focus, or too dim; steering gear difficulties; motors in need of tuning-up; defects in ignition equipment.

"Out of the 70,646 cars brought in for inspection, based on latest returns, 47,827 cars were found in need of correction in some respects to make them absolutely safe for driving. Practically all makes of cars used were represented among those examined.

"Showing an earnest desire to cooperate in making driving safe for all, approximately 46 per cent of those who brought their cars to service stations for examination, had corrective measures taken at once."

OUTPUT OF COMMERCIAL MOTOR VEHICLES IN 1935 IS SECOND LARGEST IN HISTORY OF INDUSTRY

Preliminary Estimate Places Year's Output At 725,000 Units

INCREASING recognition of the advantages inherent in motor truck transportation is reflected in the 1935 production figures of American motor truck manufacturers.

Indications are that 725,000 units will be turned out of the factories by the end of the year. This represents a 21 per cent increase over 1934, and places this year's production second only to that of 1929. A total of 535,041 trucks were manufactured during the first eight months of this year.

Added demand for American motor trucks abroad boosted 1935 foreign sales 28 per cent over last year. The estimate for twelve months of foreign sales is 193,000 units, or more than a quarter of the total production.

Studies on motor truck operation completed during the past year by government agencies, indicate that the main reasons for shippers' selection of trucks are economy, fast service and door-to-door delivery.

Motor trucks paid over one-fourth of the motor vehicle special tax, although they constitute only an eighth of the vehicles registered.

A survey recently completed by the Automobile Manufacturers Association indicates there are 48,000 communities in the United States without rail service, and, therefore, almost entirely dependent on highway transportation.

These communities represent nearly seven per cent of the country's population. Many of them came into being during the last twenty-five years largely because highways have made them accessible to the large industrial centers.

The year 1935 marked the meeting of forty-four state legislatures which considered seven thousand bills affecting motor vehicle production, sales and operation.

Although numerous proposals for increased fees on trucks were introduced, few of them were enacted. Gross weights for two-axled vehicles were increased in two states and decreased in two. Reductions of gross weight limitations for three-axled vehicles were effected in two states and increased in two. There was a decided trend towards legislation reducing overall lengths of tractor-semi-trailers and other combinations, five states reducing lengths of semi-trailers and four reducing lengths of other combinations.

In several states, Nebraska, New Mexico, Oklahoma and Maine, port of entry measures were enacted despite the vigorous protests of newspapers generally and the opposition of shippers and truck operators. Delaware also adopted a port of entry statute, enforcement of which is contingent on enactment of similar statutes in two neighboring states.

This comparatively new type of legislation is considered unwholesome and inimical to the public interest because it, in effect, sets up trade barriers between states similar to customs offices between countries, and thereby works a burden on interstate commerce. It also discriminates against truck users by denying them the right of license-tag reciprocity which is accorded other vehicles.

Connecticut, Rhode Island and Delaware joined the states with regulatory laws governing rates and services of common and contract carriers. Four western states have amended their motor carrier laws to extend state commission control over private operators hauling their own merchandise between cities.

The Federal Government, for the first time, passed a law regulating rates and services of interstate common and contract carriers which became effective October 1, 1935.

Enforcement of several provisions in the measure have been

(*Please turn to page* 79)

The TROUBLE SHOOTER

A department, devoted to correspondence from readers of FLEET OWNER. Any question having to do with automotive service will be answered in this department. All properly signed inquiries will be replied to by mail and such of them as are believed to be of possible interest to other readers will be published in these columns.

This Is NOT a "Brief" for the Motorcycle

Question: We have been considering putting on a motorcycle delivery unit, and can't get any information on what the operating costs are, except what the dealer claims. . . . Of course, we all know that they are cheap on gas and oil, but what we are interested in is the upkeep and repairs, as there is no dealer in our city, and no parts stock this side of Portland, Ore.

We would plan to use the motorcycle here in town; only for ice-cream deliveries, as they are not large enough to haul ice or coal. Personally, I am against buying one, on account of their diminutive size, and although a small truck might use more gasoline, I believe it would last longer and give better service than a motorcycle.

At the present time we are using a Whippet Four on this run, and haul as much as 1,000 pounds per load. We are getting a yearly average on gasoline of 27 m.p.g., and in 50,000 miles we have only had two valve-grinds. . . . If you have any information on this subject, we would appreciate it very much.—C. F. B., Baker, Ore.

Answer: There are many motorcycle delivery units in use in New York City, delivering all sorts of products. We have contacted the operator of a fleet of these, and he has given us the following information:

His fleet consists of the well-known Indian "Traffic Car" 3-wheel jobs, the payload capacity of which is 1,000 lbs. However, he sometimes carries as high as 1,500 to 1,800 lbs., he says.

His gasoline mileage ranges from 25 to 30 m.p.g., this in the thickest of New York City traffic. (You should be able to do much better in *your* operation, provided that there are not many mountainous grades to negotiate.)

His tire mileage, using 18 x 5.25 tires, is about 30,000 miles. His mechanical costs are not great, the drive-chain being the part that wears out fastest. These chains last, we are told, from 15,000 to 20,000 miles, and a set of sprockets will outwear two sets of chains.

Light motor overhauls are done yearly in this fleet, to the extent of new rings, a few new valves, springs and guides. The cost of such a job for labor and material, our informant tells us, is about $15 or $20. We are also told that transmissions give very little trouble and last indefinitely; and that when a clutch job is needed, $1.25 pays for the labor, and $2.40 will pay for *all* of the parts that you can squeeze in.

The foregoing might sound like a "brief" for the motorcycle in disguise. Let us assure our readers that it is *not*. It is simply a resumé of information secured from an *operator* of a fleet of them. And not forgetting the truck which is now in use, as mentioned in the above question, we believe that Mr. B. is to be congratulated for getting 27 m.p.g. out of it.

●

Wants Definition of "Ton-Mile"

Question: We are desirous of obtaining information on the proper interpretation of the Ton-Mile as used in cost accounting, relative to the automotive transportation industry. . . . Do you know of any treatise on this subject? If so, will you please advise us where and how this may be obtained? . . . Or, can you give us any information as to the proper interpretation?—A. E. C., New Haven, Conn.

Answer: We do not know of any printed literature on the subject. As a matter of fact, the Society of Automotive Engineers reports that they have done nothing in this direction, and there seems to be no standardized cost accounting method, outside of plain common-sense.

Basically, a ton-mile is arrived at by multiplying the tons of payload delivered by the number of miles carried. For instance, if you were to carry 10 tons of payload 100 miles, that would be 1,000 ton-miles. If you carried nothing on the return trip, you still would

You May Not Believe It!

(But It's True)

THE FACT:

TOO much grease on the frame sometimes causes spring-hangers and other riveted parts to loosen, resulting in elongation of the rivet-holes and final shearing-off of the rivets.

THE PROOF:

ONE operator reports that grease, thrown from rear universal joints, finds its way to the front hangers of the rear springs on a certain make of heavy-duty truck. . . . These hangers are riveted to the outside of the frame and the grease that gets between frame and hanger provides a lubricating effect that cuts down the "surface tension" of the two parts and starts a slight back-and-forward movement. . . . Eventually this movement increases, due to wear on the rivets and holes, until an unsafe condition is manifested. . . . The remedy: Keep the grease INSIDE the universal joints by covers or other means, or else keep the frames clean of grease. . . . Cold-riveting, using snugly-fitted rivets, will also help to minimize this condition. . . . It actually occurs, believe it or don't.

have 1,000 ton-miles, but your vehicle would have operated 200 vehicle-miles.

If this trip cost you $50.00, (round trip) your cost per ton-mile would be $.05, but your cost per vehicle-mile would be $.25. These costs can be very easily figured by simple long division, once the total cost is known. Similarly, by keeping a record of the ton-mileage for any given period, the cost per ton-mile can be easily computed, as well as the cost per vehicle-mile for the period, once the total cost is known.

Many operators in the long-haul trucking business do not even bother to keep records of ton-miles. Those that do, however, simply use their ton-mileage figures for comparison with their vehicle-mileage, the object being to keep the vehicles operating continuously with as much pay-load as possible, and to cut idle mileage to a minimum.

We have come across other fleet operators who have an entirely different conception of ton-miles, and their various methods are quite confusing. The thing to remember is that ton-miles are just that, and nothing else. You can't add idle mileage to ton-miles, just the same as you can't add apples to oranges, and expect to get a total in oranges. . . . We have discussed this problem with one of the country's foremost ton-mileage statisticians, and his definition of the ton-mile is precisely the same as ours, other opinions to the contrary notwithstanding.

●

What Color-Scheme for Aluminum Finished Trucks?

Question: In the July issue of FLEET OWNER, *you bring up the issue of color combinations in painting truck bodies. As there is quite a divergence of opinion at our plant, and since you so kindly offer to give some advice on the subject, we would like to present the problem to you, in the hope that you may be able to give us some light on what is the most accepted combination in use today.*

The body, cab, hood and fenders of our trucks are painted aluminum; while the chassis, wheels, radiator grille and running boards, as well as the lettering, are painted in a contrasting color.

Would we have a better harmonized unit if we changed the color on the fenders and lamps to correspond to the color used on the chassis and wheels? What would you suggest for this contrasting color?

Is the present tendency to confine the color scheme to two colors, or can more be used successfully? Would you suggest the same contrasting color for the lettering, or should it be a contrast to the original combination?—A. C. A., New Kensington, Pa.

Answer: It is quite difficult to answer this question without knowing exactly the type of vehicle used and the style of body to which the color-scheme is to be applied. You also fail to state the contrasting color which you are now using.

However, it would seem that such units would be more attractive if the fenders and lamps were finished in the contrasting colors of the chassis, wheels, grille and running boards. The lettering, if it has good visibility, should be also in the contrasting color, but outlined in black or white.

As a contrasting color with aluminum, we would suggest a "midnight" blue. The present tendency in commercial vehicle colors is toward the use of one all-over color, or monotone combinations, leaving the contrast to wheels, striping and lettering. The blue used on the cover of our October issue, is a good one to use with aluminum.

●

Serviceable Shop Forge Fabricated

IN the hands of an ingenious operator, the oxy-acetylene blowpipe has been used to convert scrap automobile parts into a large number of useful articles ranging from grinding machines to garage door hinges. A recent visitor to a contract welding shop reports the utilization of old steel plates, pipe and automobile parts in the fabrication of one of the neatest and most serviceable shop forges that he has ever seen.

As the illustration shows, the table of the forge is round and can be approached and worked at from any side. The upper part of the table is a steel plate imbedded in cement, which helps keep the plate from burning out and prevents the motor and other lower parts from being overheated. A convenient rail for holding forge tools extends entirely around the table. This is made of small diameter pipe held to the table by four short cross pieces to which it is ox-welded.

A supporting shaft is connected by parts of a discarded differential housing to the table and to a concrete base. The blower rests on an oxwelded mounting, and the air outlet duct is joined at right angles to the supporting shaft.

An interesting swivel hook-up operates dampers in the forced draft ducts so as to permit any desired portion of the air supplied by the motor to be utilized. The wheel operating these dampers is manipulated by a turn of the wrist, and a universal joint arrangement makes it possible to control the draft from any of several positions.

The oxy-acetylene operator who built this forge certainly demonstrated his ingenuity and ability in the use of the blowpipe. No doubt there are many other shops having miscellaneous accumulations of scrap parts. An operator with an inventive turn of mind should have no difficulty in utilizing them in the fabrication of much needed items of equipment.

DON'T BE HIGH-PRESSURED!

CERTAIN publishers urge you to clip coupons, the object being "inquiries" for advertisers. . . . In this respect FLEET OWNER is "different." We have carefully selected the following new literature, believing that it will be valuable to fleet operators. . . . The firms who issue it have assured us that it will be MAILED to you, without cost, obligation or salesmen!

ANY OF THIS LITERATURE THAT YOU MAY REQUEST OBLIGATES YOU IN NO WAY. IT'S YOURS FOR THE ASKING. THE COUPON IS FOR YOUR CONVENIENCE!

258. WHAT IS A DIESEL? . . . Every power user is asking questions today about Diesel Engines—how they work—what can be expected of them—and what special advantages each type possesses over the other types. . . . We have just run across a handy, pocket-sized booklet that contains, in Question-and-Answer form, all of those questions most commonly asked—and their answers. . . . By having a copy of this book, which is free for the asking, you, too, can be correctly informed as to the why and the how of the Diesel. . . . Use the coupon below, indicate Number 258 if you want this book, and stick it in your pocket to read on the train, at lunch-time, or with that midnight snack. . . . We'll guarantee that you'll find it valuable.

•

259. ANOTHER DIESEL BOOKLET. . . . This one is called "The Whys and Hows of Diesel Engines." . . . It is written in a simple, direct way and avoids highly technical discussions. Some of the principal topics are: "Why the Diesel?" . . . "How Does the Diesel Run?" . . . and "What do Owners Think?" . . . This book also, will fit into your pocket, and can be read on the train, at the movies or in bed. A bunch of elementary line-drawings, illustrating Diesel principles, will be found particularly interesting. . . . For a free copy, ask for Number 259 on our coupon below.

260. IT IS THE LAW! Legal advice is usually costly. This type is not, for when you wish to run your trucks into other states, you won't have to consult a lawyer or a transportation expert—not if you have a copy of the book entitled "Truck and Trailer Size and Weight Restrictions" . . . This is a *real* handbook that includes every state in the Union. To make it official, each set of state laws is printed right in the book, and is countersigned by a prominent authority of each state. There's not a line of advertising in the book, and it's offered *free* to you . . . If you'd like a copy, mark Number 260 on the coupon below and we'll do the rest.

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261. WHEEL ALIGNMENT MANUAL. . . . Our recent survey, conducted through the medium of our Question-of-the-Month Club, revealed that there is a surprisingly increasing amount of interest being shown in front-axle and wheel servicing, on the parts of fleet operators everywhere. . . . If you want to keep abreast of changing conditions and at the same time get a thorough schooling in wheel alignment, this free manual (it's really a good-sized book) will be of great help. . . . In addition, it also contains a chart giving front-axle specifications for cars and trucks. . . . Ask for Number 261 on our coupon below, and a free copy will be *mailed* to you promptly.

262. THE SNOW-REMOVAL PROBLEM. . . . If snow-removal comes within your duties, (and we are sure that it *does*, with fleet men in state highway departments, county departments, municipalities, etc.) we feel certain that we have run across a very interesting book that is bound to appeal to you. . . . It starts out as a handsome, elaborate catalog covering all of "Good Roads" Snow Plows. However, after you have looked at the new model display, you will find a chapter that very unselfishly tells you just what to do in order to conduct a sensible, efficient snow-removal program. . . . It also gives a map showing average snowfall in inches and also shows all highways that are now being cleared of snow for motor vehicle traffic. . . . Then there is a full table of data regarding the number of vehicles used by various states for snow-removal; the cost of snow-removal; and other similarly interesting figures. . . . For a free copy of this book, just include Number 262 on the coupon.

•

263. THE AMERICAN BOSCH PARADE. . . . That is the title of a new booklet that completely illustrates, describes and prices the *complete* line of American Bosch products. . . . Some of the things it covers are coils, condensers, spark plugs, battery chargers, magnetos, horns, windshield wipers, ditch-lights, fog-lights, Volt-o-Matic generators and Diesel engine fuel pumps. . . . There is a whole chapter that tells in simple terms just how the Volt-O-Matic generator works. . . . The booklet is interesting, descriptive and elaborately gotten out. . . . For a free copy, without obligation, use the coupon below, mentioning Number 263.

•

264. LUBRICANTS FOR ALLOY BEARINGS? . . . Here is an interesting bulletin, not too technical, that tells something about lubricating the new type of cadmium-silver and copper-lead alloy bearings. . . . It also points out certain facts with relation to graphited lubricants, and calls attention to the fact that colloidal graphite is chemically inert and therefore should be entirely free from corrosion-forming tendencies where these bearings are used. . . . This bulletin is important as a reference work. . . . For a free copy just mention Number 264 on the coupon below.

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265. A TIRE THAT WILL NOT SKID? . . . Such is the claim of General Tire & Rubber Company. Demonstrations are said to prove it. . . . This new type of tire has a revolutionary type of tread design and they have made some startling tests with it. . . . A 12-page booklet takes you right through all of these demonstrations, tests, etc., and also illustrates and describes the tire itself. . . If you are somewhat skeptical about this matter, and don't believe it possible to construct a true "skidless" tire, we'll wager that you'll find this booklet enlightening. . . . It's free, and Number 265 on the coupon brings a copy to you promptly. . . . No calls; no salesmen.

The Editor, FLEET OWNER, ... 1935
90 West St., New York, N. Y.

Kindly send me without cost or obligation the following literature mentioned in the December issue. (Order by number)

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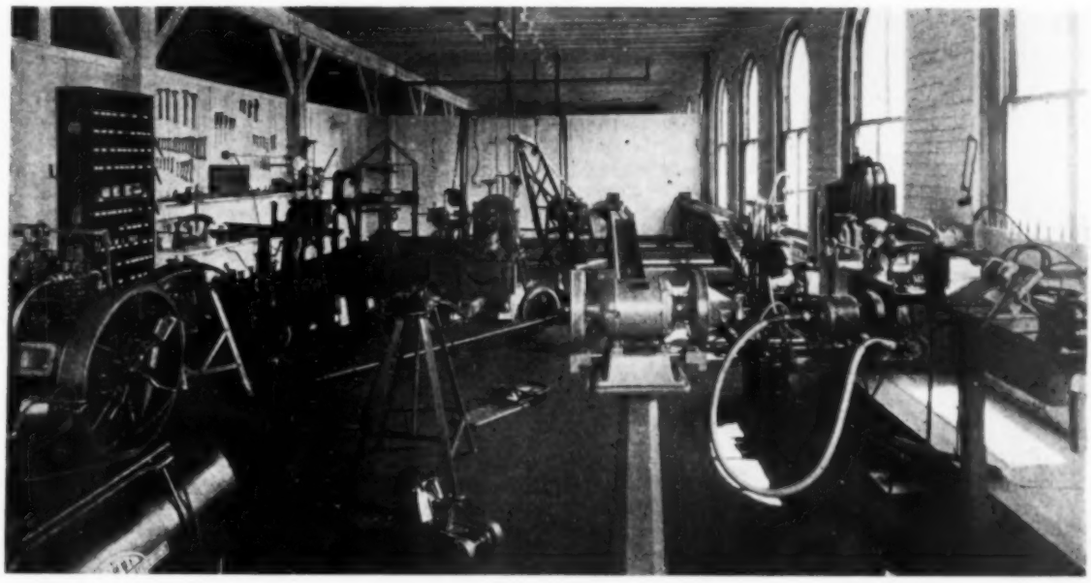
Name of Fleet .....

Address .....

City and State .....

Your Name ..... Position .....

Number of Vehicles Operated .....



AUTOMOTIVE SHOP EQUIPMENT

FOREWORD:

IN compiling this presentation of Automotive Shop Equipment, we have attempted to include a well-balanced assortment of new (or fairly new) time and money-saving apparatus which we believe will be of interest to every fleet operator, regardless of how much work he does in his own shop, or how much he farms out to other shops.

The special eight-page section which immediately follows this page, for the sake of simplicity, we shall call our own Shop Equipment "Encyclopedia." This section contains illustrations and brief descriptions of various manufacturers' products. Most of them have recently been introduced, and many of them will be shown at the Joint Trade Show in Atlantic City, this month, for the first time.

There are many more new shop equipment items which, on account of lack of space, could not be included this month. These will be shown in subsequent issues in our regular "Road and Shop" department. If you find this presentation of interest, we'll feel satisfied that we've done something useful and constructive.

Together with each description is given the manufacturer's name and address. When writing for further information concerning any product listed, we will be very appreciative if you will mention FLEET OWNER, so that the source of your inquiry may be determined.—H.C.F.

FLEET OWNER'S SHOP EQUIPMENT ENCYCLOPEDIA

Thermoid "Tru-Chek" Brake Tester

THIS brake testing equipment is being introduced to the trade by The Thermoid Rubber Company, Trenton, N. J. It was developed in France, and Thermoid (also Johns-Manville)

are marketing it in this country and Canada.

The machine consists of a caterpillar belt or tread connected by means of gears and chains to an operating crank which contains the measuring mechanism. With the car jacked about one inch off the floor and the pedal depressor engaging the brakes, the tester is moved beneath the wheel. By turning the crank, the tread engages the tire and turns the wheel. The dial then measures the resistance offered by the brakes. One wheel is tested at a time and the dial is equipped with two pointers, one to give the reading for left side wheels and the other for right side wheels. When these pointers give corresponding readings for both wheels in a pair, the brakes of that pair are equalized.

The Tru-Check Brake Tester will enable many shops that now test brakes manually to do this work scientifically. The Tru-check tester will detect faulty adjustment of brakes, faulty brake linings, measure brake action, insure equalizing each pair of brakes, and obtain proper distribution of braking action between front and rear wheels. It tests dynamic friction, or friction in motion, under full brake application.

This brake tester is small, compact, and sturdily built. It weighs only 40 pounds. It is mounted on hard rubber wheels and has a handle so that it can be either rolled or carried around easily. For further details address Thermoid Rubber Company, Trenton, N. J. Mention of FLEET OWNER always helps.

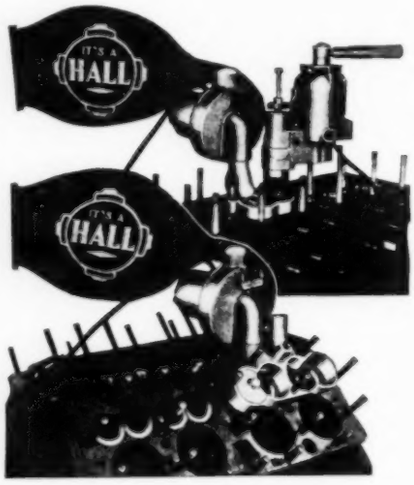
●

Keeps Grindings Out of Motors

EVERY service man knows that valve seat grindings should be kept out of motors being serviced and most of them endeavor, by various methods, to keep them out but with only partial success in many cases.

Covering various motor parts during the grinding operation and the use of an air line after grinding have been the usual procedure in the past. "However," says Milt Obee, sales manager of the Hall Manufacturing Company, "the most careful mechanics are actually wiping and blowing grindings into the motor by this method. In addition, they're spending a lot of time on unnecessary operations both before and after the grinding is done.

"In designing a suction system for this purpose, we kept in mind the fact that this equipment was needed by every shop doing valve seat grinding, regardless of the make or type of seat grinder used. The result is an efficient suction system, whether used with the Hall Eccentric Grinder or grinders of other make."



The new Hall Suction System is shown here in use on Ford V-8 and Plymouth and Dodge motors. For V-8 motors a dual-type suction housing is furnished. This handles four valve seats with one setting of the housing. For Plymouth and Dodge Motors, a single housing handling two seats to a setting is supplied. A universal type housing which is quickly locked to an adjacent stud is also available.

The motor-driven fan unit with dustbag is made by a nationally famous vacuum cleaner manufacturer and can be instantly changed from one type of suction housing to another so that if the equipment is originally purchased for servicing one make or type of motor, it can be adapted to any other make or type of motor at any time by the purchase of the additional suction housing needed.

The motor supplied is of 110-volt, universal high speed type, though similar motors of other voltage can be supplied. The dust bag is made of the same closely-woven fabric used in vacuum sweepers and is easily emptied by the removal of the clamp at the wide end of the bag.

This is just one of the new equipment items to be shown at the A.S.I. Show by the Hall Manufacturing Company. Complete details may be obtained from Hall Manufacturing Co., 1620 Woodland Ave., Toledo, Ohio. . . . Mention of FLEET OWNER always helps.

●

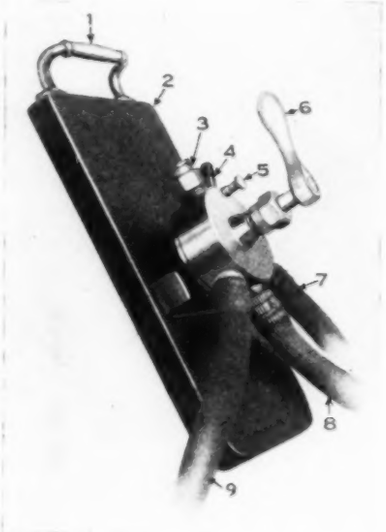
Green's Reversible Flusher

A FLEET maintenance man designed and patented this reversible radiator flusher, so it certainly should merit a description in these columns.

The Green Reversible Flusher, illustrated here, will flush any cooling system, *both ways*, a simple turn of the lever reversing the flow instantly.

The valve is mounted on a hardwood base, to rest on the fender while flushing. Three pieces of hose are supplied, to connect with engine block, radiator and waste-line. Various sizes of adapters are available, to make the hoses fit any outlets. The small connection (Figure 3) is a standard coupling to fit city water hose. The still smaller connection (Figure 4) is a standard air-hose connection.

In operation, the various hoses are connected up and the air and city water are applied. By turning the lever on the flusher from one side to the other, the water pressure is instantly and completely reversed. A special "button" is also provided (Figure 5) for shooting the air through in short, hammer-like jerks, which helps to remove stubborn deposits.



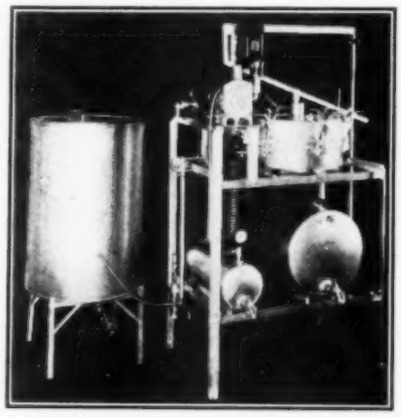
The maker claims that this flusher will do a thorough flushing job on even the worst cooling systems. For further information and prices write to Frank W. Green, 290 Mt. Vernon Street, Oshkosh, Wis. (P. S. Mr. Green is in charge of a fleet of trucks and developed this flusher as a side-line.)

WELL-EQUIPPED SHOPS KEEP TRUCKS MOVING

Hilco Oil Reclaimer

THE manufacturers of this oil-reclaiming unit have recently called it to our attention as a new model. Its operation is somewhat as follows:

Crankcase drainings are poured into a circular tank at the side of the machine, which holds 40 gallons. From this, the oil is continuously pumped up to the reclaimer, subjected to a heat of 380 degrees F., and then run through filtering material which cleans the oil, de-odorizes it and neutralizes any acid.



Reclaimed oil is then drained off into the larger tank, while diluents pass to the smaller tank, for use as penetrating oil, if desired. A vacuum-pump, operated by a ¼ h.p. motor, keeps the machine in continuous operation; 24 hours per day, if necessary, excepting time out to drain off clean oil and change filter pads.

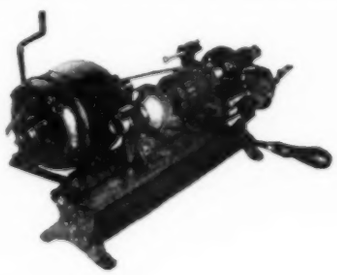
The makers will be glad to supplement this brief description with further details, etc. Made by The Hilliard Corporation, Elmira, N. Y. Mention of FLEET OWNER will help to identify your inquiry.

•

Trucut Commutator Refinisher

HERE is a specialized little outfit that is designed to refinish and undercut the commutators of starting motors and generators.

With this machine it will no longer be necessary for fleet operators to "farm-out" this work, and since the initial cost of the machine is very little, it should soon pay for itself in all but the very smallest fleets.



The "Trucut" Commutator Refinisher comes complete with two centering chucks and electric under-cutter. There are no extras to buy.

For further details, prices, etc., address Frank N. Wood Company, 316 Caswell Block, Milwaukee, Wis. . . . Mention of FLEET OWNER will speed up the service.

•

A NEW Method of Cleaning Parts

A QUICK, easy, safe process for completely removing grease from metal parts is announced by the Circo Products Company, Cleveland, Ohio.

This process utilizes Circo-Solv, a high powered, non-inflammable solvent especially adapted for automotive greases. Used with the special degreasing machine, illustrated, Circo-Solv is vaporized at 188 degrees Fahrenheit by a thermostatically-controlled gas or electric heating unit.

As the solvent is vaporized, it completely covers and condenses on the colder metal parts placed in the tank in a metal basket. Those vapors quickly dissolve all grease and flow back to the bottom of the tank where the solvent again vaporizes, leaving the collected grease in the bottom of the tank. Thus the solvent is maintained clean and is used over and over again. A series of cooling coils near the top of the tank prevent loss of vapor.

It is stated by the manufacturer that this process cleans the dirtiest metal parts in from 1½ to 3 minutes. Complete descriptive literature and demonstration may be obtained on direct request to the manufacturer, Circo Products Co., 3088 W. 106th St., Cleveland, Ohio. . . . Mention of FLEET OWNER will help.

•

"Liftmaster" Hydraulic Jacks

THE addition of a complete line of hand-operated hydraulic jacks is announced by The Joyce-Cridland Company, Dayton, Ohio. These jacks are marketed under the trade name of "Joyce Liftmaster."

Mechanical features listed by the maker include: one-piece body of malleable iron; bronze bearings; ground and fitted pump plungers; special leather ram caps; leak-proof construction; compact; and safety. Models available range from 1½ to 30 tons.

The new line is designed especially for the automotive and industrial fields. Descriptive literature sent free on application. Mention of FLEET OWNER always helps.

•

Packard Offers Wiring "Caddy"

THE Packard Electric Corporation is offering to the trade a new re-wiring caddy, designed to provide the mechanic with all his necessary wiring equipment, where and when he needs it.

The caddy is a complete re-wiring kit with ample space for both high and low tension cable. It contains 800 terminals, rubber protectors and distributor clips and a Rajah stripping and crimping tool; in fact everything that is needed for practically all re-wiring jobs. It can be purchased with or without cable and may be equipped by the mechanic from his present stock of Packard Cable.

The chief object of the new article is to save the shop time and money in hurry-up calls and emergency road service. Because of its time-saving features, compactness and completeness, the caddy is meeting with an extremely favorable response from those in the auto service trade who have inspected and used it.

For full details address Packard Electric Corporation, Warren, Ohio. . . . Mention of FLEET OWNER will help, as always.

FLEET OWNER'S SHOP EQUIPMENT ENCYCLOPEDIA

Schrader Pencil-Type Gauge

HERE is Model No. 8100 of the new Schrader Pencil-type tire guage, especially suitable for high-pressure tires on trucks and buses. It is made to conveniently fit the pocket and has fountain-pen-type clip.

The satin-finished indicating bar is calibrated to test tires at pressures ranging from 20 to 120 pounds, and is graduated to read in units of five pounds.

For complete details, write to A. Schrader's Son, Inc., 470 Vanderbilt Ave., Brooklyn, N. Y. . . . And if you mention FLEET OWNER they'll appreciate it. And so will we.

•

New 9-Inch Lathe Booklet

THE South Bend Lathe Works, South Bend, Indiana, announces a new two-color, 24-page, 8½ x 11 size, catalogue describing the new 9-inch "Workshop," precision lathe. The booklet contains a great variety of illustrations, many describing the 8 different models of this low-priced lathe, some giving instructions for performing the many operations encountered in the automotive shop, and others displaying the complete set of attachments this lathe can be fitted with.

This 9-inch lathe is of the back-geared, screw cutting type, and has ten new improvements, including, besides the new twin gear reverse for right and left hand screw threads permitting the operator a quick, simple change, a new ball bearing thrust collar on the head stock spindle, improved back gear mechanism, improved split take-up nut for adjustment of spindle end play, larger spindle bearings, wrenchless bull gear lock, and a ¾" hole in spindle.

The lathe is offered in four bed lengths of 3-ft., 3½-ft., 4-ft., and 4½-ft., with the bed a one piece casting of 50% steel and 50% nickle iron. It is capable of performing 75% of the jobs in the average service shop, the makers state.

A copy of this bulletin may be secured by writing the South Bend Lathe Works, South Bend, Indiana, and mentioning this magazine, if you please.

•

Blackhawk Jacks Streamlined

THIS interesting display shows the new beauty that has been imparted to a new line of hydraulic jacks by Blackhawk, designated as "Blackhawk Wings."

Although commercial vehicle operators are not primarily interested in the particular appearance and colors of these jacks, may we state that they come in six beautiful colors to match popular car shades (an ideal Christmas present for your wife); and also that the capacity is 1½-tons.

Designed for passenger cars and light trucks, the dimensions are: low height 7 inches; hydraulic lift 5½ inches; hand-screw adjustment 2¼ inches; total height 14¾ inches. Write to Blackhawk Mfg. Co., Dept. F.O.11, Milwaukee, Wis. . . . Mention of FLEET OWNER always helps.

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Chicago-Pneumatic Fender Iron

HERE is a new device for removing dents from fenders. It is a pneumatic fender hammer, made by one of the oldest manufacturers of pneumatic tools.

The CP Fender Iron, as it is called, is an improved finishing tool, for smoothing out dents, wrinkles and rough spots on damaged automobile fenders and other sheet metal parts. It is recommended for use after the preliminary roughing-out or shaping of the damaged part, but when the metal is not too greatly distorted, it may also be used for the roughing-out operation.

A spring-controlled lever instantly raises or lowers the hammer to the work. Control is simple and positive. The outfit is furnished complete with built-in pressure regulator and throttle, two yokes with different reaches, one hammer die and 5 assorted shaping dies, 50 feet of air hose and wooden rack for holding dies.

For interesting circular describing this new tool, address Chicago Pneumatic Tool Company, 6 E. 44th St., New York City. . . . Mention of FLEET OWNER will speed up the service.

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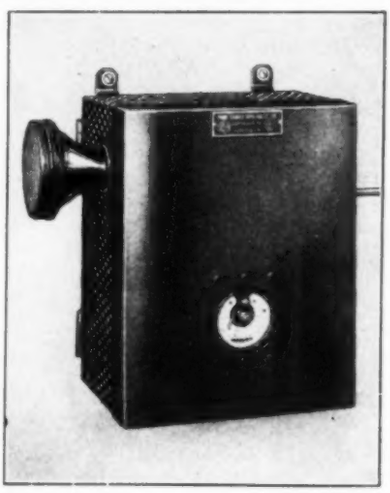
New Bulletin on Monoxide Indicator

THE Mine Safety Appliances Company, Pittsburgh, Pa., has completed an informative new bulletin on the M. S. A. Carbon Monoxide Indicator, a portable instrument designed to indicate the low concentrations of carbon monoxide in air which are universally recognized as dangerous.

Executives interested in accurate means of determining the presence of this poisonous gas as a safeguard to employees or to users of their products, as the case may be, can secure advance copies of the new bulletin by writing the company direct, asking for Bulletin DS-1. Mention of FLEET OWNER will help to speed up the service. There's no obligation.



WELL-EQUIPPED SHOPS KEEP TRUCKS MOVING

Brake Press-O-Meter by Bendix

A NEW product, called the Brake Press-O-Meter, has been announced by The Bendix Products Corporation of South Bend, Ind.

The Press-O-Meter is actually a

hydrostatic scale for measuring the exact weight required to stop a car, whether the car is equipped with mechanical, power or hydraulic brakes.

The unit is composed of a pump and scale connected by a high-pressure hose line. The pump is held in place on the brake pedal pad by two C-clamps which form a part of the pump's assembly. A pressure pad is arranged for applying direct pressure to the piston of the pump. Ample openings to permit the pump being mounted universally to different designs of pedal pads are incorporated.

The hose line connecting the pump and scale head is of sufficient length to permit a second occupant of the car to carry the scale in hand and record the pressure readings made by the driver. A bracket is also furnished (at extra cost) to permit the scale head being mounted on the steering column. There is a maximum hand provided on the scale's face for catching peak pressure readings.

The Brake Press-O-Meter may be used either in conjunction with a brake testing machine or it may be used when the vehicle is undergoing a road-test. It is easy to install, gives clear, concise readings, and is entirely self contained, the makers state. For further information address Bendix Products Corp., South Bend, Ind. . . . Mention of FLEET OWNER will speed up the service.

●

The Utility of Carbide Residue

THE Linde Air Products Company, 30 East 42nd Street, New York, has available on request a 20-page booklet entitled "The Utility of Carbide Residue." It explains in detail how owners of acetylene generators may capitalize on their valuable residual by-product.

The booklet tells how carbide residue can be used as the principal ingredient in whitewash, fireproof cement, mortar, plaster, concrete, or stucco. Formulas and hints for the preparation and utilization of these various covering agents and construction materials are given. The industrial uses of the residue as an oil and dirt scavenger, as a cleaner for drainage pipes, as a brake and clutch dressing, for machinery, and as an ingredient in boiler lagging are described. Among the agricultural uses of carbide residue for which directions and formulas are given are: spraying plants and orchards, killing insects, correcting soil acidity, improving soil tilth, preserving wooden fence posts, and disinfecting and deodorizing farm buildings.

Carbide residue is said to be better than other forms of slaked lime for the purposes described. Its superiority results largely from its complete hydration, the small size of its constituent particles, and its unusual chemical purity. The booklet is free. Address as above. And mention FLEET OWNER, if you please.

●

Evanwood Safety Brake Balancer

HERE is a device that is claimed to provide quick and accurate readings of brake conditions inside of the drum. With it, the operator may balance brakes, check brake lining,

check drums and all brake connections.

A simple dial shows the operator the condition of the brakes as the device is applied to each wheel, testing for pressure, out-of-round drums, high and low ceiling, worn lining and faulty linkage.

Tests may be made anywhere, with tires wet or dry, and the readings are taken directly from the drum and not from the outside of the tire. Such is the manufacturer's description.

For further details write to C. & C. Sales Corporation, 1775 Broadway, New York City. . . . Mention of this publication will help to identify your inquiry and will speed up the service.

●

Unit Heaters by Fedders

THE Fedders Manufacturing Co., Buffalo, N. Y., announces the addition of seven sizes to its line of Series 3 Unit Heaters, making 20 standard models in the complete and well graduated line. The addition of these seven Unit Heaters provides sizes and capacities up to 1300 EDR.

Data on the complete line is given in Data Book No. 537, sent free on request.

The completeness of the line together with its well graduated spacing between each capacity assures the correct and most economical size for every requirement both from the standpoint of heat delivery and that of initial cost, it is stated.

The importance of this is emphasized because of the wide use of Fedders Series 3 Unit Heaters in commercial installations, due to their handsome cabinets and quieter operation, the manufacturer declares.

●

Low Priced "Inspection Line" by Bendix

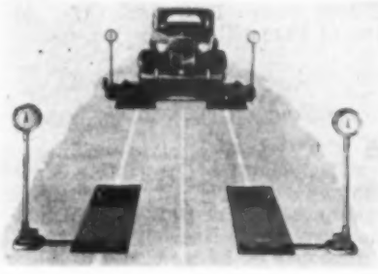
ANNOUNCEMENT of a new safety inspection line, called "Bendix Standard Safety Clinic" and priced within reach of many operators, has been made by Frank B. Willis, general sales director of The Bendix Products Corporation, South Bend, Ind.

The new Bendix Standard Safety Clinic is especially designed to quickly inspect and determine the safety factors of wheels, brakes, axles and all vital safety features of any automobile. The complete unit is simple, compact and adequate for any safety test that may be prescribed. It is designed for floor, flush, or raised ramp mounting. It *makes corrections* for caster, camber, toe-in, king pin angle, steering error, and of course the well known Cowdrey Brake Tester unit makes brake adjustments an easy matter. It is capable of testing from 30 to 50 cars an hour.

"We have found a definite need of a compact and inexpensive inspection and correction 'line,'" said Mr. Willis in his announcement.

"The Bendix-Feragen division of our company is thoroughly experienced in the designing and building of all types of inspection equipment. Consequently it has been unusually easy for us to develop the Bendix Standard Safety Clinic.

"In this unit we have provided for practically every demand a compul-



sory inspection ordinance or law may make. The unit is compact, quickly installed, economically maintained and unusually simple to operate. It does a very thorough job and does it with neatness and dispatch."

FLEET OWNER'S SHOP EQUIPMENT ENCYCLOPEDIA

New J-M Brake Tester

SMALL and medium-sized fleet garages and shops will find a valuable tool in this low-priced brake testing machine now being marketed by Johns-Manville.

Realizing that the big machines are too expensive for any except large fleet shops, J-M is offering the "J-M Tru-Check" testing machine, which is claimed to be as accurate as the more expensive apparatus. Because it is compact and portable, the tester does not take up valuable space, is more convenient to use and can be moved about readily. J-M Tru-Check measures the braking effect of each wheel, separately and independently, on a dial and registers the result as precisely as the finest, most delicate laboratory instrument, J-M engineers state. In principle, it operates like the individual units of the larger, four-wheel machines. The power is supplied by hand, however, rather than by an electric motor. A few easy twists of the crank on the device gives the reading on the indicator.

One of the tester's features is the steel, caterpillar tread which cradles the tire. This construction contributes materially to the accuracy of the readings and is unaffected by wet tires or smooth treads. Out-of-round drums can be also detected with this machine, it is stated.

Further information about this new equipment may be obtained from Johns-Manville, Executive Offices, 22 E. 40th Street, New York City. Mention of FLEET OWNER will help.

●

New "Caterpillar" Welding Unit

A COMPACT electric welding unit designed by Caterpillar Tractor Company of Peoria, Ill., has been announced as a standard edition to the Company's line of products. This unit consists of a General Electric generator and a Caterpillar Twenty-Eight tractor. . . . Because of its flexibility, short turning and track-type construction, this outfit is able to get into otherwise inaccessible spots, it is claimed. It can be driven over rails, steep shoulders, and can rest alongside tracks or curbs while welding is progressing. . . . Details sent on request.

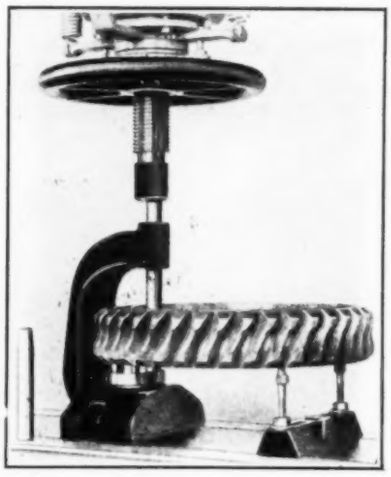
●

New Universal Ring Gear Riveter

A RECENTLY announced ring gear riveter that is universal in its application and use, is made so that its base fits all Manley presses. A simple change of the anvil or die will make it suitable for either light or heavy work, the Manley Mfg. Co., York, Pa., states.

Manley pressure riveting compresses the rivet into the hole 100 per cent, filling every crevice with metal, it is claimed. The top die is held in raised position by a spring, the use of one hand only is necessary in placing the rivet. The rivet is held in a vertical line while being compressed. Bottom anvils are on a steel turret plate which rotates so that the anvil for the size rivet required may be easily aligned for the respective top die.

The Manley Ring Gear Riveter is listed under three numbers: No. 45-H for Light Work, No. 45-HD for



Heavy Work, and No. 45-C Complete Equipment for Light or Heavy Riveting Work. The frame of the tool is the same for each. Parts for the complete unit can be added at any time. . . . For further information address Manley Mfg. Company, York, Pa. . . . Mention of FLEET OWNER always helps.

●

New First-Aid Kit Ready

A NEW first-aid kit, designed to meet the specifications of leading industrial medical directors, has been adopted as standard by the Standard Oil Company of New Jersey and other large American industrial companies, according to the maker.

The special feature of this new kit, which is known as the "Brac-Kit" and was developed by the Davis Emergency Equipment Company, New York, is that it can be permanently installed in a given place, but its contents are instantly available in emergencies and are protected from contamination and damage when treatment is being applied.

The kit consists of two baked enamel steel cases, an outer case which can be permanently attached to a wall by means of screws, and an inner case which is normally kept inside the outer, where it is held in place by a simple lock. When needed, the inner case can be unlocked by a twist of the handle and carried, with all necessary first-aid supplies, to the scene of the accident.

The Brac-Kit contains ten D-carton first-aid units, each of which holds enough material to serve for several treatments. The exact assortment depends upon the industry in which the kit is to be used, but a widely accepted assortment is comprised of adhesive plaster, gauze compresses, individual swabs of Isodine (the new iodine anti-septic), individual tubes of Tannoid (tannic acid treatment for burns in a water-soluble jelly), ammonia inhalants (for fainting), eye dressings, and a tourniquet. . . . For further information address Davis Emergency Equipment Co., 55 Van Dam St., New York, N. Y.

●

New Portable Exhaust Gas Tester

A PORTABLE exhaust gas tester, capable of a full motor combustion test, yet small enough for easy carrying, is a new introduction of The Lantz-Phelps Corporation of Dayton, Ohio.

The tester is intended to be helpful in widening the user's field in rendering automotive service, and making it possible to give the important exhaust gas analysis test on the road, in the shop, or in the establishments where fleets of automotive equipment are housed.

This new portable exhaust gas tester can be operated from any six-volt storage battery and can be used with the battery of the car being tested, when road tests are conducted.

The new tester is available at an attractive price which makes it practical for any automotive service organization to have the benefit of the

exhaust gas test. To those interested, the manufacturer will be pleased to forward more detailed descriptive information.

Address Lantz-Phelps Corporation, 911 E. Third St., Dayton, Ohio. . . .

WELL-EQUIPPED SHOPS KEEP TRUCKS MOVING

Bendix Recording Decelerometer

A NEW product—the Friedli-Feragen recording decelerometer—is announced by Frank B. Willis, vice president in charge of sales of the Bendix Products Corporation. The new device has been approved and

officially adopted by many states and municipalities and is now offered to the trade by all Bendix distributors, Mr. Willis said.

The Friedli-Feragen decelerometer stamps a permanent record in duplicate on a card. It is an extremely simple device and it is portable. It will record a "20-mile an hour stop" accurately, although the car may actually be traveling slower or faster than that speed, the makers claim.

The device is small, its dimensions being 6x4x7 inches. It weighs exactly 14 pounds. Its action is automatic and two readings are made of every stop, one recorded on a certificate and the other on the scale that is on top of the instrument.

In operation, the instrument is clamped to the left-hand running board, as shown in the accompanying illustration. The certificate is inserted in the slot, the car is started and the stop is made. The car may be driven at any speed from five to thirty miles per hour. The stop should be made with the foot brake only and as swiftly as possible.

The pointer and certificate in duplicate will record the stopping distance exactly as if the car had been traveling twenty miles per hour. The record of the stop is stamped on the duplicate certificate in such a manner that it cannot be erased or defaced. The same test can be made, in bad weather, by placing the instrument on the floor of the car and having it held securely during the test. Test may be made indoors if 25 or 30 feet of space is available.

The brake inspection certificate is printed in duplicate. It makes recordings for both two and four wheel brake cars. . . . Complete details may be obtained without obligation by writing Bendix Products Corp., South Bend, Indiana. . . . Mention of FLEET OWNER will speed up the service.

New Valve Seat Inserters

TWO valve seat inserters developed by the Hall Manufacturing Company, are illustrated here. Both models are identical in design and operation, except that Model M is power-driven through a self-contained electric motor, while Model N is hand-operated with a ratchet.

Model M, according to Mr. M. T. Obee, of the Company, will counterbore for any valve seat in from thirty seconds to two minutes. Either model can counterbore the block for the standard, .010" or .020" oversize seats which are available through jobbers.

After the seat is inserted in the block, the Hall inserter spins the metal around the seat to make a permanent installation without screws, heating or cooling and without danger of fracturing the block. Standard equipment and extensions permit servicing of any type valve seats.

Both models are available in a variety of sets, complete with cutter heads, spinner blades, ring driver sets, etc. More complete information can be obtained from Hall Manufac-

turing Co., 1620 Woodland Ave., Toledo, Ohio.

When writing to manufacturers regarding any equipment mentioned in this department, mention of FLEET OWNER will insure a prompt reply to your inquiry. We'd appreciate it, too.

•

Chek-Chart Brings Out 6th Edition

CHEK-CHART has now brought out its Sixth Edition of automobile lubrication diagrams. The new edition consists of 200 pages in loose leaf form, covering all makes of passenger cars from 1931 to 1935 inclusive. Popular models of trucks, covering 93% of all truck registrations, are also included.

The Sixth Edition has been completely revised and reset in order to bring all of the older model cars in line with car manufacturers' present recommendations as to motor oil, gear lubricants, spring servicing, shock absorber equipment and much additional information that was not previously demanded on the older model cars.

The notes and service instructions have been considerably extended and expanded so that full and complete information is given on every part of the car that ever requires lubrication. The lubrication diagrams have been much improved, made clearer and easy to read. The instructions in the front part of the book have been fully revised and brought up to date to include all modern constructions.

Over 120,000 CHEK-CHART volumes are now in use. Published by The Chek-Chart Corporation, 624 South Michigan Avenue, Chicago, Ill.

•

New 64-page Brush Catalog

A NEW line of paint and varnish brushes is announced by David Linzer & Sons, Inc., 10 Astor Place, New York City. The new line is known as "Compo-Fibre."

No metal is used in the construction of these brushes, the makers state, and the compo-fibre binding will not corrode or conduct electricity.

Many uses are said to have been found in various industries for this type of paint brush, particularly to guard against static generation. The manufacturers have a new illustrated and descriptive catalog, comprising 64 pages. Copies will be furnished, free of charge, to anyone writing for them. . . . Mention of FLEET OWNER always helps.

•

Dill Markets Blow Gun

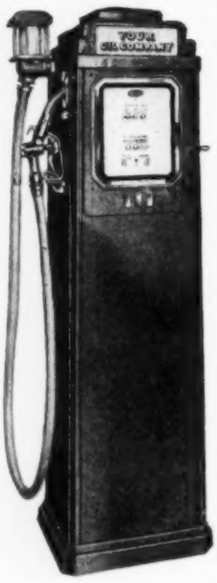
A NEW tool that will find many uses around the shop is being offered by The Dill Manufacturing Company, Cleveland, Ohio. . . . It is the detachable blow gun, illustrated here.

This gun is really an attachment which clamps to a regular air-hose chuck, as illustrated, and can be operated conveniently and removed instantly, the makers state.

The Dill Blow Gun is recommended for blowing dirt out of tire casings and radiator fins; blowing out gas lines, air filters, distributor heads, etc.; blowing water from spark plugs and wires; blowing out carbon scrapings; dirt, dust, etc.

FLEET OWNER'S SHOP EQUIPMENT ENCYCLOPEDIA

Gasoline Computing Pump



ONE of the newest products of the Service Station Equipment Company, Conshohocken, Pa., is this modernistic-looking gasoline computing pump, recently announced.

The full-view gauge is said to meet all visibility requirements and is readily removable for periodical cleaning.

The clock mechanism is of Veeder-Root design and shows gasoline delivered in gallons and tenth-gallons.

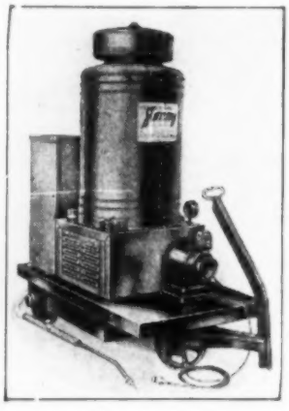
The pumping unit is of the rotary vane type, operating at slow speed and developing high, dry vacuum. An air eliminator of latest design is used, considerably enlarged to insure a perfect vapor and air elimination.

This model is also available with the conventional 20-gallon dial type clock. For further details address Service Station Equipment Company, Conshohocken, Pa. . . . Mention of FLEET OWNER always helps.

•

Hypressure Jenny Cleaning Machine

ILLUSTRATED here is the standard portable type of chemical vapor spray cleaning machine, known as "Hypressure Jenny" and built by The Homestead Valve Company, Coraopolis, Pa. This machine is designed to fill the need for a cleaning outfit that will have a multiplicity of uses, automotive or industrial, wherever cleaning is done.



In this piece of equipment a fuel-oil burner is used to heat a generator coil, through which either water, or cleaning solution is run. By means of pressure control and regulating valves, it is possible to obtain a wetter or drier vapor, as desired. The cleaning solution (or water) in passing through the generator coils is heated to the temperature and pressure necessary to produce a thoroughly conditioned vapor spray, the makers state.

A cleaning gun, together with suitable hose, is provided, having a spray nozzle control valve. Opening and closing this valve automatically starts and stops the generator.

There are many more interesting details of this spray cleaning machine, too numerous to mention here. The maker offers a wealth of interesting literature that, in addition to describing the equipment, gives comparative costs and savings, over other types of cleaning methods. . . . For a free copy address Homestead Valve Company, Coraopolis, Pa. . . . Mention of FLEET OWNER always helps.

•

Fountain Brush for Car-Washing

HERE is a practical vehicle washing brush that is said to reduce materially the time and labor cost of cleaning cars, trucks and buses. It combines brush and water action, the soft, tough brush bristles loosening the dirt, while the water flushes it off.

In operation the water hose is affixed to the end of the hollow handle, the water running through the handle to the thick mop of soft, tough bristles woven into a cast aluminum head, providing a gushing fountain of water. A scratch-proof rubber gasket and guard are provided, to prevent damaging the finish. Brush unit refills are available at low cost when worn out.

This piece of equipment is finding increasing favor among all types of fleet operators, the makers claim. A special price is now being made to readers of this publication. . . . For details, address Beaurline Fountain Brush Co., 1157 S. Wabash Ave., Chicago, Ill. . . . . Mention of FLEET OWNER will speed up the service.

•

9-Inch "Workshop" Lathe

ANNOUNCEMENT of a 1936 Model 9-inch "Workshop" Lathe at a new low price, is made by South Bend Lathe Works, South Bend, Ind.

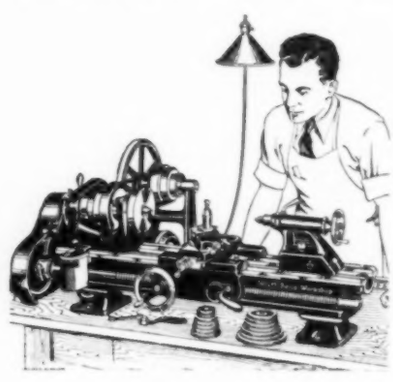
This 9-inch lathe is a back geared, screw cutting, precision type, requiring a ¼-horsepower motor for operation, and available with either a double friction countershaft, a horizontal countershaft in plain type, or a horizontal countershaft with belt-tension adjustment. There is a choice of 8 different models with four optional bed lengths of 3-ft., 3½-ft., 4-ft., and 4½-ft.

There are ten new features contained in this lathe. Especially significant is the new twin-gear reverse for cutting right and left-hand screw threads and for right and left-hand automatic longitudinal feeds to carriage. This reverse gear permits a quick change from right to left-hand threading and vice versa. In addition there is a new ball bearing thrust-collar on the headstock spindle, a new and improved tailstock, an improved compound rest, and a new and heavier designed saddle.

The metals used in construction of the lathe are all of equal quality to those used in the larger, more expensive units, it is claimed. A strong, rigid lathe bed is one of the features, with a one-piece casting of 50% steel and 50% nickle iron, constructed to bear the brunt of a heavy load, the makers state.

A complete set of attachments for many types of work can be fitted to this lathe, including all forms of automotive machine work, such as truing armature commutators, refacing valves, machining pistons, making bushings, boring connecting rods, etc.

Readers desiring complete information may write the Technical Service Department, South Bend Lathe Works, South Bend, Indiana, for free

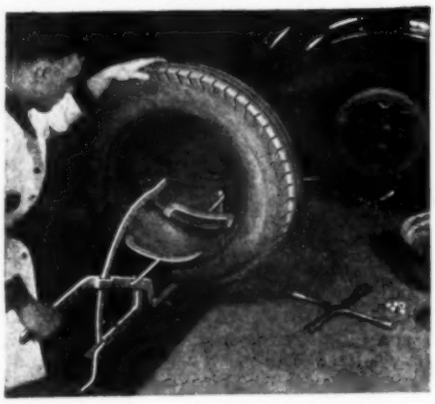


catalogues and bulletins illustrating and describing this lathe and instructions for various operations performed on it. . . . Mention of FLEET OWNER always helps.

WELL-EQUIPPED SHOPS KEEP TRUCKS MOVING

Bear "Jiffy" Tire Spreader

THE Bear "Jiffy" tire spreader will spread all sizes of tires, from the smallest to the largest of truck pneumatics. Here is what the manufacturers have to say about it:



"You can use it on the floor—on the curb—on a bench—or wherever you may have occasion to inspect a tire. And, it is just the ticket to take along in the service truck for emergency roadside jobs.

"For years, service men have been lugging and lifting heavy tires onto high contrivances. Now, with the Bear Jiffy, it is simply a matter of rolling the tire onto the spreader—no lifting necessary. The grips are quickly adjusted to the tire bead and spread with very little effort. Then, too, the spreading mechanism is equipped with an exclusive self-locking device that is secure and positive in operation. This important feature eliminates straining or tugging to either lock or release."

For further details and information as to price, which we understand is surprisingly low, address Bear Manufacturing Co., Rock Island, Ill. . . . Mention of FLEET OWNER always speeds up the service.

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Bendix-Feragen "Wee-Gee Board"

ONE of the first things to do in checking front axles, wheels, etc., is to check for toe-in, camber, etc. This operation requires a toe-in

gauge, and the new Bendix-Feragen "Wee-Gee Board" is recommended by its makers for this work.

The "Wee-Gee Board" represents a section of the road mounted on roller bearings that are free to pivot sideways. As a vehicle wheel is rolled over it, it gives a visual reading of the slightest abrasive tire action.

It will check for toe-in, not only in the straight-ahead position, but for right and left-hand turns as well. Attention is called to the tapered approach plate; also to the fact that hardened steel braces are used, top and bottom, with hardened rollers between.

If you'd like further information concerning the Bendix-Feragen "Wee-Gee Board" address Bendix Products Corporation, South Bend, Ind. . . . Mention of FLEET OWNER always helps to speed up the service.

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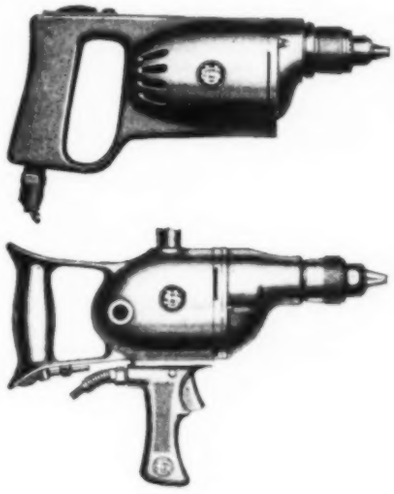
Two New U. S. Drills

TWO new low-priced electric drills are offered by The U. S. Electrical Tool Company, Cincinnati, Ohio. The illustration at the top is their new ¼-inch Automatic, while the lower one is representative of their new ½-inch Commander.

The Automatic is of ball-bearing construction throughout, has a ca-



pacity of ¼-inch in steel; 2,000 r.p.m.; universal motor; 3-jaw chuck; nickle-alloy steel gears; its net weight is 4½ lbs.

The Commander is of half-inch capacity and can also be used for driving hole saws, wood augers, etc. Ball bearings are used on the armature shaft, while bronze bearings are used on other shafts. Motor is also of universal type, although other voltages are available on both drills.

It is not our policy to mention prices in announcements of this kind, but if you will write for a circular, you will get all the details, including the prices, which are quite low, we understand. . . . Address U. S. Electrical Tool Company, Cincinnati, Ohio. . . . And if you mention FLEET OWNER it will help to bring a prompt reply.

Bendix-Feragen Safety Equipment

THIS photograph illustrates the Bendix-Feragen outfit for straightening axles, frames and other heavy-duty chassis parts.

The press and its accessories have

been designed strictly for heavy-duty work and the makers state that camber jobs on all trucks, tractors and trailers, regardless of axle size can be handled on it. It does not make any difference whether the axles are tubular, rectangular or I-beam in cross-section. Frame straightening is another typical use for it.

All parts are made of drop-forged steel. For the press, a two-stage hydraulic pump, remote from the rams, is furnished. There are screw adjustments on the rams, which are adjustable sidewise. Pressure can be applied to the rams singly or both together, and may be released on one ram at a time or simultaneously, at will.

The press is portable, mounted on heavy ball-bearing casters, making movement easy, despite the great weight embodied in the appliance.

For complete details regarding this equipment, address Bendix Products Company, South Bend, Ind. . . . Mention of FLEET OWNER always helps to bring a quick response.

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"Sol-Kleen" Announced by duPont

A NEW cleaner for old automobile finishes, one that will remove chalked film, tar and heavy coats of wax, is announced by E. I. du Pont de Nemours & Co. It is called "Sol-Kleen." The new cleaner makes sanding unnecessary and will not, in itself, scratch the old finish, the makers state.

It is said that the new cleaner is an easier way to prepare old lacquer, baked enamel and synthetic finishes for refinishing, and that it gives new life to the old finish and enables the new finish to adhere more strongly.

Fleet operators interested in a product of this nature, especially prior to refinishing bodies, are invited to correspond directly with the Finishes Division, E. I. du Pont de Nemours & Co., Wilmington, Del. . . . Mention of FLEET OWNER is always appreciated.

LETTERS TO THE EDITOR

AGAIN, STOCK OR MUTUAL?

● *To the Editor:* In the November issue of FLEET OWNER, on page 46 there appeared an inquiry from a fleet man on the subject of "Stock vs. Mutual Liability Insurance." You also printed some remarks of a Stock Company executive relative to the question, and followed with an Editor's Note offering to permit a Mutual Company executive to tell *his* side of the story on this page. I am pleased, therefore, to offer the *other* side of this story, relative to mutual company insurance.

The reason why more casualty insurance is sold by stock companies than by mutuals is clearly told on pages 94 and 95 of the *Spectator Handy Chart of Casualty Insurance Companies* (1935). For the stock companies it will be noted that operating expenses consumed 39.6% of premiums as against 20.6% for the mutual companies. The difference is just 19% of premiums, and from other sources it can be proved that this great difference is accounted for almost wholly by selling expenses. Simple arithmetic, therefore, shows that the 113 stock casualty companies in 1934 spent more than $40,000,000 in sales expense in excess of the amounts spent by the mutuals, which numbered 23 companies.

Despite this tremendous difference in sales effort, paid for of course by stock company policyholders, the mutuals increased their relative proportion of the available business. It is a foregone conclusion that 1935 will show the same upward trend, which has been in evidence for more than ten years.

In actual practice the mutual companies have little difficulty in proving that their dividends represent true savings. When the stock companies as a group, and individually 55 out of 113, show an underwriting loss, it is not difficult to prove that the mutuals with profits larger than their dividends offer stronger protection. When stock company investment accounts show relatively heavy purchase of common stocks, most informed insurance buyers prefer an insurer who concentrates on protection without mixing in speculation. When mutual companies can show surpluses proportionately as large as stock companies' capital and surplus combined, it is not difficult to prove that there is really greater risk in insuring with a stock company than with a mutual.

Of course, such proof takes time and effort of salesmen. The mutuals, however, prefer to save on their selling costs and give the saving to their policyholders in dividends. After all, there is no reason why policyholders should pay for selling insurance to other people to an extent inconsistent with a healthy growth of their company.

The key to the whole problem of stock and mutual insurance is that the mutual has as its sole reason for existence the interests of its policyholders. They are interested in new business only to the extent that it contributes to their efficiency.—*Mutual Company Executive.*

(EDITOR'S NOTE: We'd advise everyone to refer back to page 46 of our November issue before drawing any conclusions. Then you will have read *both* sides of the story. This, we think is a fair way of handling the situation. May we kindly ask all insurance men to now "lay off"; this page really belongs to fleet operators and we have a bunch of interesting fleet letters to print, you know.—H. C. F.)

●

PARKING AREAS FOR TRUCKS?

● *To the Editor:* I have read with a great deal of interest the October issue of FLEET OWNER, and want to compliment you on the type of articles that you are publishing.

The thought occurred to me that you might be interested in the fact that we are now preparing to construct a series of Waysides on our highway system. These will vary in size from one or two acres to thirty-five or forty acres. The first series naturally will be located on the most heavily traveled routes. In the general design for the development of these we hope to include parking areas for heavy trucks.

This is a new departure in the general park field, as most of these areas will be devoted to facilities for recreational traffic, including parking areas, picnic groves, drinking water, latrines, trails, wild flower preserves, recreational fields, etc., in accordance with the areas available and the topography.

Sometimes I have deplored the fact that interstate truck drivers making long trips find it necessary to park along our shoulders for resting periods. In many cases they do this at places where they naturally interfere with traffic and in some cases create traffic hazards. Wide-awake, alert truck drivers are much to be preferred to the worn out, tired and sleepy driver, and I admire the tired driver, who realizing and appreciating his fatigued condition, takes the time to pull off to the side of the road and rest.

With this in mind, I have suggested that each of the Wayside areas be provided with adequate parking facilities for these drivers—not alone a place for them to park, but an opportunity for them to leave their trucks and relax. The extent to which these areas can be developed, not only on the Waysides but adjoining the highways, is dependent upon the use that the drivers themselves make of them.

Any suggestions that you or your readers might have along these lines will be greatly appreciated.—*H. J. Neale, Landscape Engineer, Virginia Department of Highways, Richmond, Va.*

●

LOW-PRICED SIGNAL WANTED

● *To the Editor:* As you no doubt know, there has been a law passed recently in Pennsylvania, which is not yet in effect, but will be on January 1, 1936. This law demands the installation of directional signal lights, front and rear, on every vehicle whose body extends 24 inches or more from the center of the steering post.

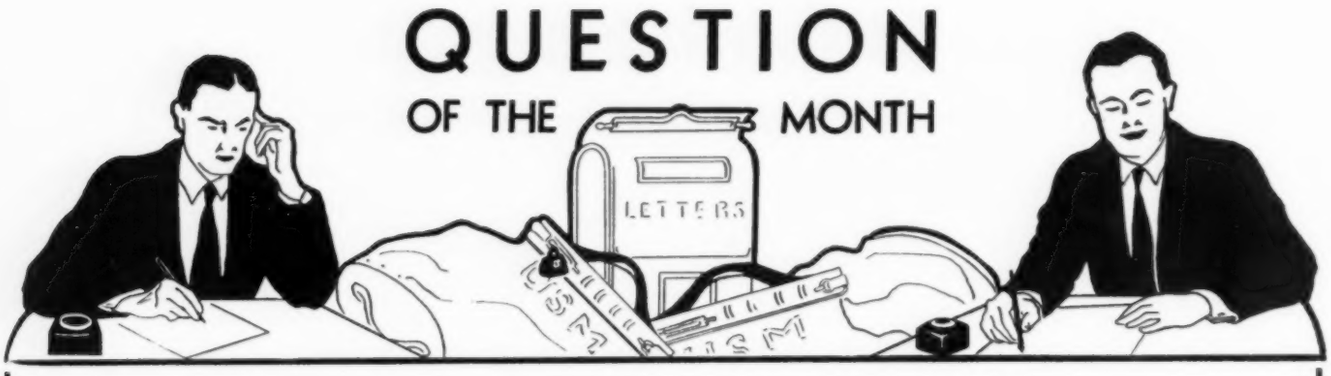
There are now several devices on the market to fill this need and they have been passed on by the department. However, in my opinion, they are high-priced and it seems to me, as well as to quite a few other fleet operators, that there should be some device on the market that could be purchased for a whole lot less money.

I was wondering if you have any information about this and if you can give me the name of some manufacturer who makes a directional signal device that is reasonable in price.—*Thomas B. Schmidt, Capital Bakers, Inc., Harrisburg, Pa.*

Americans are proud of the industrial achievements that have made their brawn, courage and ingenuity world famous. The chief disease which threatens that supremacy is tuberculosis. It is the greatest cause of death between the ages of 15 and 45. Help protect American man power from this enemy by purchasing the Christmas Seals that fight it all year round. The seals you buy today may save your life tomorrow.

The National, State and Local Tuberculosis Associations of the United States

Buy Christmas Seals



ANNOUNCEMENT

QUESTION Number 61 was offered in the form of a Prize Contest, (see page 53, October issue), the question being "What Piece of Shop Equipment is Most Valuable to You and Why?"

Fifty entries were received. The letter which won first prize appears on pages 16 and 17 of this issue. Four additional prize-winners were selected for publication. These appear on pages 18, 20, 22 and 24 of this issue. We are pleased to list the winners. here:

FIRST PRIZE: S. D. MacMurray, Asst. Gen. Mgr.,
White Star Bus Line, Inc.,
Hato-Rey, Porto Rico.

ADDITIONAL PRIZES: F. C. Fiechter, Fleet Manager,
John Wanamaker Department Store,
Philadelphia, Pa.

D. H. Woods, Engineer-Distribution,
Nashville Gas & Heating Company,
Nashville, Tenn.

V. T. Gibson, Shop Foreman,
Texas State Highway Department,
Childress, Tex.

R. C. Kaster, Shop Foreman,
Johnson County Garage,
Olathe, Kans.

It is interesting to note that the winner of the first prize has chosen his oxy-acetylene and electric welding equipment as most valuable. And so has one of the other prize winners. Other equipment selected by the winners includes an Oil Reclaimer, an Exhaust Gas Analyzer and a Lathe.

Other shop equipment mentioned by participating operators includes some of the following apparatus: Air Compressors, Cylinder Reconditioning Machines, Hydraulic Lifts, Valve Refacing Machines, Emergency Coil Kits, Hydraulic Presses, Motor Testers, Brake Equipment, Lubricating Equipment, Painting Equipment, Floor Jacks, etc.

A typewritten tabulation is now being prepared, showing the names of the equipment specified, the trade names, and the number of times each was mentioned. Copies will be duly sent to all fleet operators who participated in this contest. . . . The contest was successful! Thanks for your cooperation!—H. C. F.

A SEASONABLE, TIMELY TOPIC!

THE Windshield Wiper is a relatively unimportant item in a great many fleets —until it rains! . . . Or snows! . . . Or there's hail and sleet! . . . And when it does, and if the wiper is not operating, then the fireworks begin!

Since this is the beginning of the winter season, it should be a most appropriate time to discuss the subjects of Windshield Wipers and Windshield Defrosters. . . . It's important to discuss them at *any* time, however, since these items are very important from the Safety standpoint.

Therefore, may we call your attention to the questionnaire below. We don't like to burden you with questionnaires. Nobody likes them. But this is the only method we can conveniently employ to gather data on important fleet subjects.

Instead of passing on to you the products of editors' imaginations, isn't it much better to pass back to you the data gained from actual experience in the field? . . . Now you know it is, so why not participate in this questionnaire today! In return, you'll get a private, personal copy of the summary to all the returns.

(Please tear out and mail to The Editor, The Fleet Owner, 90 West St., New York City)

Question No. 63—Windshield Wipers

Of the windshield wipers used in your fleet, what percentage are vacuum-operated?.....%

What percentage are electric-operated?.....% Air-operated?.....% Hand-operated.....%

Which type of wiper, in your opinion, is best for your particular fleet requirements and why?

☐ Vacuum-operated ☐ Air-operated Others? .....

☐ Electric-operated ☐ Hand-operated .....

Please state the reasons for your preference as to the above .....

.....

.....

When replacement wipers (complete) are needed, which of the above types do you specify?.....

What is your source of supply on replacement wipers? (Please check below)

☐ Automotive Jobber; ☐ Vehicle Dealer; ☐ Vehicle Manufacturer; Others?.....

Are standard equipment wipers meeting your requirements satisfactorily?..... If not, please explain your difficulties .....

.....

.....

Do you use windshield wipers in front of driver only, or on both sides of the windshield?.....

If double wipers are used, are they tandem-driven, or do they have separate motors?.....

If tandem-driven, do the wipers operate satisfactorily with the increased load?.....

Have vacuum-operated wipers caused any difficulties with carouretion?..... If so, please explain in detail.....

.....

How often do you lubricate windshield wipers?.....What type of lubricant is used?.....

How is lubricant applied to windshield wipers?.....

What is the average life of your windshield wiper motors?..... What is the life of the wiper blades?.....

Do you repair your own windshield wipers?..... Or, do you farm it out?.....

What are some of your most common windshield wiper troubles? (Please explain in detail).....

.....

.....

Have you had any experience with heating devices (defrosters) to help keep windshields clean?.....

If so, has it been satisfactory or unsatisfactory?..... Which make of defroster do you prefer?.....

Remarks .....

.....

.....

How many vehicles in your fleet? (Please state below)

Trucks or Tractors..... Trailers..... Pass. Cars..... Buses..... Miscellaneous.....

Note: If you cooperate with us and fill out this questionnaire, you will be entitled to a tabulated report covering all of the answers.

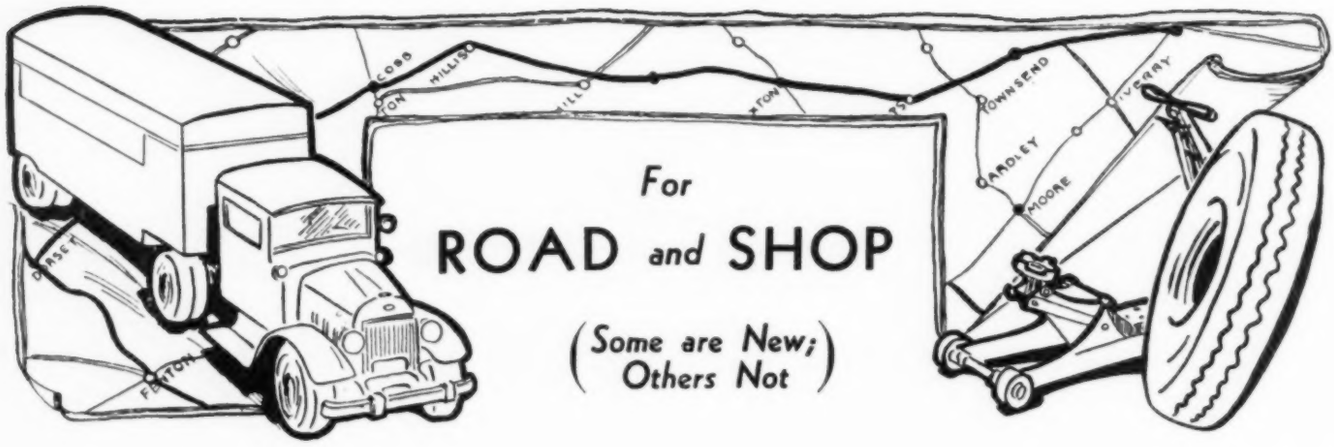
Swap your Maintenance experience with other fleet operators in this easy, convenient way. We do the work. You get the benefit.

Name of Firm .....

Address .....

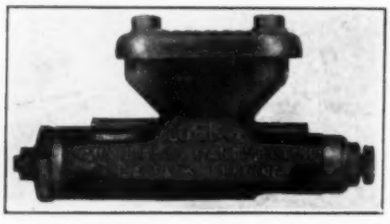
City and State .....

Your Name ..... *Position*.....



Loebs' Auxiliary Carburetor

THE "Loebs Auxiliary Carburetor," as it is called, is a small device that attaches to the intake manifold and is controlled entirely by vacuum. At a recent dynamometer test, at which were present a number of prominent fleet men, a Packard 8-



cylinder car was used. Without Loeb's auxiliary carburetor, the combustion efficiency registered 60 on an exhaust gas analyzer. . . . With the auxiliary carburetor installed, the combustion efficiency jumped to 80.

Gasoline consumption on the car in question was decreased by 20 per cent, and the speed of the car, originally set at 30 m.p.h. was increased to 34 m.p.h. when the auxiliary carburetor was used, without altering the throttle setting.

Briefly, the Loebs Auxiliary Carburetor consists of an automatic valve that is threaded into a 7/16-inch hole in the intake manifold. An adjusting screw is provided so that adjustment at idling can be made. Then the throttle is rapidly opened, until the engine will "take it" without popping back. That's all there is to it. One model will fit any engine.

This device, according to the makers, provides maximum economy at intermediate speeds. At idling, and at wide-open throttle, the device automatically becomes inoperative, thus providing sufficient fuel for open-throttle requirements. If you'd like further details, write directly to Moore-Chapin, Inc., 1061 Atlantic Ave., Brooklyn, N. Y. . . . Mention of FLEET OWNER will bring a prompt reply.

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Zenith Enlarges Detroit Plants

THE acquisition of adjacent property and extensive alterations and additions to the research laboratories and engineering buildings of The Zenith Carburetor Company, Bendix subsidiary in Detroit, Mich., have been announced by Herbert Sharlock, director of public relations of The Bendix Aviation Corporation. . . . The executive staff of Zenith will continue to be headed by Victor Heftler, who has been the guiding hand of Zenith since its organization. He will be assisted by B. W. Westcott, vice-president and general manager.

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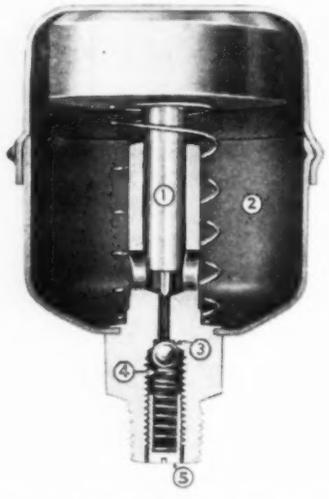
Automatic Chassis Lubricators

HERE is a new chassis oiler, designed to replace the present lubricating fittings on various chassis and motor parts of automotive equipment.



Here is how it works: Road shocks cause the weighted plunger (1) to force lubricant from the reservoir (2), past the check valve (3), into the high pressure chamber (4), from which it is metered by the adjustable metering screw (5), to the wearing surface of the bearing.

The reservoir holds about 500 drops, and the makers state that this lubricator can be regulated to deliver from one to five drops of oil every 100 miles, depending upon the adjustment, claiming that it will pump a steady flow of lubricant to the bearing while the vehicle is in motion.

Adapters and elbows can be furnished to make this lubricaton function in any type of fitting. Installation of these fittings throughout will eliminate the usual "greasing" period and will save a substantial amount of chassis lubrication costs, the manufacturers state.

It is known as the "Automatic Lubricator" (Alco), and is made by Automatic Lubricator Co., 53 W. Jackson Blvd., Chicago, Ill., who will be glad to furnish further details on request, without obligation. . . . You'll mention FLEET OWNER when writing, won't you?

•

Heavy-Duty Model Fram Filter

THE Fleming Mfg. Co., Inc., of Worcester, Mass., announces a new model of the FRAM Oil and Motor Cleaner, designed especially for larger trucks, buses and industrial engines. It is known as Model F-2.

It comprises a seamless one-piece body of heavy pressed steel; a heavy one-piece cover bolted to the body with 10 specially designed bolts, insuring against leakage; two heavy steel bands provided for rigid mounting to motor or dash; and six inches of flexible tubing for inlet and outlet. These are supplied with each filter, providing against copper tube failure from excessive vibration.

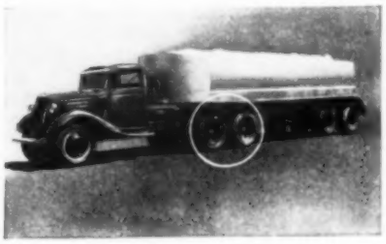
The FRAM replacement cartridge is readily changed by removing the nuts and cover, lifting out the old cartridge, installing a new gasket (furnished) and dropping in the new cartridge; there is no pipe connection to make or break. The FRAM is said to remove all dirt, abrasives, and sludge-forming materials from the oil and to thoroughly remove harmful acids.

Fleet operators are invited to write

for full details of a new "pay-as-you-save" plan on Fram Oil Filters. . . . Address Fleming Manufacturing Co., 135 Stafford St., Worcester, Mass. . . . Mention of FLEET OWNER always helps.

Thornton Dual-Ratio Drive Unit

A NEW six-wheel unit for Ford and Chevrolet 1½-ton trucks that is said to enable them to carry payloads of much greater capacity at consistent operating costs is an-



nounced by Thornton Tandem Co., 5161 Braden St., Detroit, Mich.

The Thornton Dual Ratio Four Rear Wheel Drive, as it is called, embodies a double spring and shackle design, in conjunction with a third differential, the transfer case being located midway of the two driving axles. The gearing doubles the speeds in the truck transmission, providing 8 speeds forward and two in reverse.

Basically, the new drive is a 6-wheel unit, having the above features, and driving through all of the four rear wheels. With it, Ford and Chevrolet 1½-ton trucks are said to be capable of handling 26,000 pounds gross when operated as six-wheel trucks; and 44,000 pounds gross when used in connection with semi-trailers. It also features brakes on all four driving wheels.

For more complete details, address Thornton Tandem Company, 5161 Braden Street, Detroit, Mich. . . . And if you mention FLEET OWNER it will help to identify your inquiry and speed up the service.

•

Brake-Pedal Lock is Developed

ONE of the devices shown for the first time at the New York Automobile Show consists of a simple locking arrangement to hold the brake pedal down after it has been depressed, thus locking the brakes. It is called the "Catch-It" Brake Lock, for which patents are pending.

The purpose of this device is to provide a means of easily locking the brakes while waiting for traffic lights to change, and during short parking periods. It is not a substitute for the parking brake, but is intended primarily to eliminate the extra operation of reaching for the "emergency" lever, when it is desired to hold the car still for short periods.

Likewise the necessity for holding the foot on the brake pedal is eliminated, as by merely touching a button with the heel, after the brake pedal is depressed and the car is at rest, a spring-retained pawl engages the lever portion of the brake pedal and holds it in the depressed position.

When it is desired to release the brakes, a slight pressure on the brake pedal releases the pawl, which snaps back into place, ready for the next locking.

As the device has been developed thus far, one model fits all makes of cars, trucks or buses, and installation is simple. The model which we have seen clamps directly to the lever portion of the brake pedal, while the spring retained pawl is attached to the under-side of the floor-board, with only the locking pedal on the top-side of the floor-board.

Further information as to availability of the device, manufacturing and selling rights, etc., may be obtained by addressing the inventor, H. A. Ranlett, P. O. Box 97, 332 W. 52nd St., New York, N. Y.

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New Tire Offered by General

A NEW type of automobile tire, said to be built on an entirely new principle, is offered by General Tire & Rubber Company. In contrast to conventional tread designs, the tread of this tire is made up of many thin rubber flutes, or vanes, running longitudinally around the

tire. Because of their flexibility, the makers state, these thin rubber vanes envelop, rather than resist obstructions in the road surface.

When brakes are applied hard, in emergency stops, photos through plate glass reveal that these thin rubber vanes form a serpentine pattern on the surface, each rubber vane acting as a squeegee to wipe the moisture off a wet surface, so that the adjacent vanes can cling to a substantially dry surface. By the same token, this same squirming, squeegee action of the multi-vane tread forms a clinging non-skid tire surface on a dry pavement, it is claimed.

William O'Neil, president of General, states that tests and actual demonstrations have shown that this tire will stop a car, straight in its tracks, more quickly on a wet pavement than other tires will stop a car on a dry pavement.

An interesting, fully illustrated 12-page booklet has been prepared, fully illustrating and describing the many tests made before announcing the tire. For your free copy, ask for booklet entitled "The New General Dual-10." You may obtain one from General Tire & Rubber Company, Akron, Ohio.

New Rust-Proofing Process Announced

A NEW electro-plating process, which deposits a bright zinc surface on steel articles, said to be the first time a bright plating of zinc has been commercially possible, is announced by E. I. du Pont de Nemours & Co. It is called "Du Pont Bright Zinc."

In announcing the new process, the company states that it was developed to meet the present-day need for a more economical method of making steel rust-proof while, at the same time, giving it a bright high-type appearance. The new process was developed over months of research and experiments, many of the latter being conducted in large commercial plants.

The new process can be used on a wide variety of articles, such as automobile parts and accessories; household appliances and equipment; airplane parts; builders' hardware; bolts, nuts and screws; chains, including conveyor chains; electrical supplies; elevator parts; washing machine parts; locks; steel office equipment; ornamental iron; radio parts; steel stampings, and tools of all kinds.

This new process is expected to be widely used in the automobile and radio industries, which for many years have required an economical process for the production of decorated surfaces with good corrosion-resistance on steel parts.

•

New Burch Hydramotor Hoist

THE Burch Corporation of Crestline, Ohio, introduces a line of dump bodies embodying a new power principle.

It is claimed that the Burch Hydramotor Hoist provides equal power for lowering as well as raising; a feature that is important when using a dump body, for instance, with a chip-spreader.

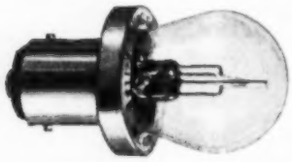
At any angle the body remains rigidly locked in position. There are no exposed working parts and only one moving part. There are no gears or oil lines. At present the company is standardizing on 1½-yard and 2-yard bodies with either plain or braced sides.

For further details and literature, address The Burch Corporation, Crestline, Ohio. . . . And if you state that you saw their announcement in FLEET OWNER we will appreciate it.

"Winx"—A Light Bulb That Blinks

A BULB for stop and signal lamps that constantly blinks while in operation is announced by Tung-Sol Lamp Works, Newark, N. J.

This bulb is a self-contained unit and is installed by the simple opera-



tion of replacing the standard bulb with the "Winx" bulb. The operating mechanism is contained in a small collar at the base of the bulb, as shown in the illustration.

Various timing of the blinking can be set during the manufacturing process, making possible from 50 to 200 flashes per minute. The accepted timing for units used in automobile stop signals is 180 flashes per minute, or three flashes per second. The operating principle is new, the makers claim, differing from the bi-metallic thermostat.

If you'd like further details, write directly to Tung-Sol Lamp Works, Newark, N. J. . . . Mention of FLEET OWNER always insures prompt service.

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Synthetic Rubber Replaces Metal

NEW uses for DuPrene, a synthetic rubber manufactured by E. I. du Pont de Nemours & Co., are constantly being found in the industrial field. Recently an automobile manufacturer adopted the use of this synthetic rubber where, heretofore, a metal spring had been used. In a packingless water pump, a ring around the pump driveshaft seated against the inner surface of the pump cover plate is locked in a position by a pin through the pump shaft and is held tightly against the cover plate by a DuPrene sleeve which is under constant tension.

The use of this synthetic rubber has proved successful in this case because it is elastic and is impervious to alcohol, anti-freeze solutions and radiator cleaning compounds that might be present in the cooling systems. Many DuPrene compounds are suitable for service conditions where natural rubber products would fail to deliver satisfactory service, as in the case cited, because DuPrene compounds will withstand oils and chemicals and, in addition, have less tendency to crack when repeatedly stretched and flexed under conditions of elevated temperatures, the makers state.

In the compounding of DuPrene, different reinforcing materials produce a composition with different properties, just the same as in the case of rubber compositions. The kind and amounts of additional ingredients will vary widely, depending upon the condition of service for which the product is designed. The methods of mixing these compounding ingredients with DuPrene are the same as in rubber practice, and the same machinery is used. Finished articles are formed for vulcanizing in exactly the same manner.

The final operation in rubber processing is a heat treatment which converts the plastic compound into a resilient, tough material. The same treatment, or vulcanization, is applied to DuPrene products, and with the same equipment as is used for rubber. In this particular adaption of DuPrene to the automobile industry, the rubber manufacturer assisted the automotive engineer by making a product which embodied the original idea of replacing a metal spring with a non-corrosive elastic material.

•

Goodrich Light Truck Batteries

THREE new storage batteries for replacement in light trucks have been added to its battery line, it is announced by The B. F. Goodrich Company, Akron, Ohio.

These new products fill the gap between the passenger-car type bat-

tery often used in light trucks, and the heavy-duty batteries for large trucks and buses.

Differing from passenger-car batteries in construction, the new batteries are able to withstand the severe operating conditions of light truck service and are a little more expensive than passenger-car types, the makers state.

Positive plates in the new products are twice as thick as those in the passenger-car type, while negative plates are similar to those in passenger-car batteries, it is stated.

In addition to Port Orford cedar separators, the batteries contain Goodrich rubber screen separators. Combinations of thicker positive plates and the heavy duty separator construction make possible longer and more satisfactory battery life than passenger-car batteries, as these two features resist the effect of high and continuous charging rates found in truck service.

In addition, the new batteries have extra acid space, made possible by special construction, improving the electrical capacity and assuring reserve power for hard service. The additional acid also tends to keep the temperature of the battery below the critical point and contributes to the added life of the battery, according to Goodrich factory officials.

New Booklet Answers Diesel Questions

WRITTEN in a simple, direct way and avoiding technical discussion throughout, a new rotogravure booklet, the "Whys and Hows of Diesel Engines," has just been issued by Caterpillar Tractor Co. of Peoria, Illinois. Principal topics are headed, "Why the Diesel?", "How Does the Diesel Run?", and "What Do Owners Think?".

The cover reproduces photographs of a Diesel tractor, stream-lined trains and a Diesel-powered submarine, and the text is interspersed with illustrations. Copies may be obtained by writing directly to The Caterpillar Tractor Company, Peoria, Ill. . . . Mention of FLEET OWNER always speeds up the service.

•

New Catalog on Snow Plows

A NEW, handsome and elaborate catalog has recently been issued by The Good Roads Machinery Corporation.

The new catalog is really a handbook, inasmuch as it shows and describes in detail the complete line of "Good Roads" snow plows; it also contains much in the way of general information of interest to snow-fighters everywhere.

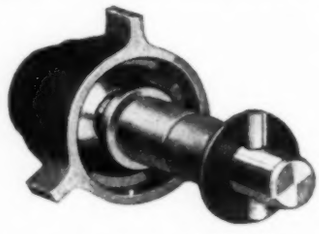
For a free copy, ask for Catalog and Hand-Book No. 100; one will be sent immediately on request. Address Good Roads Machinery Corp., Kennett Square, Pa. . . . Mention of FLEET OWNER will insure prompt service, and will be appreciated.

•

Packless Repair Pump Unit for V-8's

A NEW, one-piece packless repair unit for Ford V-8 water pumps—guaranteed to stop leaks for the life of the car—has just been announced by the Simmons Manufacturing Company, Cleveland, Ohio.

Utilizing the old pump housing, the new unit contains all other parts needed for a lasting repair. A Simmons Permanent Water Pump Seal replaces the standard packing and requires no further adjustment. Its sealing surfaces are protected by a metal housing from abrasive grit and



dirt and are not affected by anti-freeze compounds, it is claimed.

Simmons claims the new repair unit to be an inexpensive and lasting remedy for repairing leaky water pumps. They will be glad to send full details on request. Address Simmons Manufacturing Co., Cleveland, Ohio. . . . Mention of FLEET OWNER usually speeds up the service.

READER SAY-SO

(Picked at Random from The Editor's Mail-Bag)

From a Bus Operation

"DEAR Mr. Fischer: I have read your magazine, FLEET OWNER for a long time and regard it as being one of the most valuable publications that we receive." —*Del. A. Smith, Department of Street Railways, Detroit, Mich.*

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"All Good" Says He

"DEAR Mr. Fischer: We operate a very large fleet of trucks, and I have found numerous articles in your magazine, FLEET OWNER, that deal with maintenance, cost-accounting, and other fleet operators' experiences, that have proved very helpful to me. . . . In fact, I have yet to find an article that is not of interest." —*L. E. Wells, Emergency Relief Administration, Oakland, Calif.*

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Bus Operator Likes It, Too!

"TO the Editor: The writer has been an interested reader of your publication, FLEET OWNER, although our operation is limited entirely to buses. We find many useful hints in the magazine and wish to state that it is of a great deal of value to us."—*Arthur F. Bangert, Vice Pres. & Gen. Mgr., Ferguson-Welleston Bus. Co., Inc., Ferguson, Mo.*

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Pardon Us for "Jumping"

"DEAR Mr. Fischer: I am very much interested in the replies to your questionnaire on Oil Filters, Number 58. I seemed to have missed this one and would appreciate it very much if it is possible for you to forward me a copy of the summary. . . . I think your questionnaires are fine and am glad to see you 'get after' the boys for not sending them in."—*Roy Mason, Kansas City Gas Co., Kansas City, Mo.*

This is Nice Cooperation

"TO the Editor: I am enclosing Questionnaire Number 60 and would like to have the tabulations to Number 57, if they are still available. Our city has unusually hard water, so we have plenty of radiator trouble. . . . I read your magazine, FLEET OWNER, each month, and then pass it on to my shop foreman. . . . FLEET OWNER is very good and instructive for those who have fleets of trucks or other motor vehicles."—*H. P. Musick, Supt. of Streets, City of Wichita, Kansas.*

•

It's Yours for the Asking

"TO the Editor: I have been enjoying your magazine, FLEET OWNER, for some time past, and am now filling out the questionnaire on Air Cleaners. I note that you have some type-written tabulations covering your survey on 'How

Fleets Service Connecting Rods', and I would appreciate receiving a copy of same."—*G. R. Richardson, Trans. Supt., Indian Territory Illuminating Oil Company, Bartlesville, Okla.*

•

Likes the Q-O-M Department

"DEAR Editor: As a beginner in the study of fleet operation and maintenance, I have found your publication, FLEET OWNER, to be of considerable value. Especially worth-while is your department containing the monthly questionnaires."—*C. T. Butler, Central Pennsylvania Quarry & Construction Co., Hazleton, Pa.*

Liked the Brake Survey

"TO the Editor: We were very much interested in the article 'How Fleets Maintain Brakes' which appeared in the April issue of FLEET OWNER. Would it be possible for us to obtain information on the life of drums and of shoe linings for specific sizes of vehicles and for the front and rear wheels?" —*H. C. Pease, General Electric Co., Erie, Pa.*

(EDITOR'S NOTE: *We are sending you a copy of the mimeographed tabulation to this survey, which gives some figures on lining and drum mileage.*)

•

He "Certainly Does"

"TO the Editor: I certainly do find the articles in FLEET OWNER very interesting and of practical help to us in our problems. I think that FLEET OWNER covers all subjects as thoroughly as possible."—*Jos P. Grussmeyer, Sgt. Repair Shop, Dept. of Public Safety, Wilmington, Del.*

•

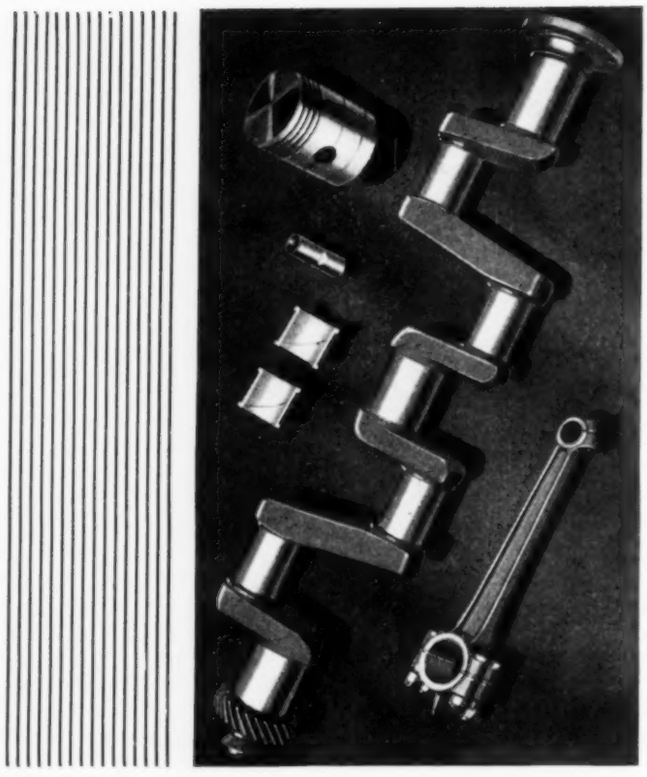
Helpful in Many Ways

"DEAR Mr. Fischer: I have been reading your FLEET OWNER magazine for the past two years and I have found it to be very helpful in many ways. We operate a fleet of fifty trucks and pleasure cars."—*Chas. E. Nelson, Service Manager, Yellow Taxi Company, Worcester, Mass.*

•

"Interesting and Educational"

"TO the Editor: Please note my new address, below. . . . On account of the change, I have missed quite a few copies of your magazine, FLEET OWNER. which I find very interesting and educational."—*John F. King, c/o Shell Eastern Petroleum Products, Philadelphia, Pa.*



For Fleet Protection

The vitals of the modern automobile engine must function under increasingly gruelling conditions. Protection of these parts is essential.

Fleet owners should be especially interested in seeing that their trucks go out with every precaution taken to insure good performance.

An important step in this direction is the use of an adjunct oil containing "dag"* Brand colloidal graphite. No matter how carefully machined, ground or honed the friction parts have been, they are still surprisingly rough. With the use of Acheson's colloidal graphite, a smooth, self-lubricating graphoid surface is established on the parts. This surface reduces metal-to-metal contact during cold starting and when oil film rupture occurs due to high temperatures and heavy pressures.

Write for Bulletin R242 discussing the use of this material with alloy bearings.

*Reg. U. S. Pat. Off.

REG. U.S. PAT. OFF. dag COLLOIDAL PRODUCTS

ACHESON COLLOIDS CORPORATION
FOUNDED [1908] AS ACHESON OILDAG COMPANY
PORT HURON • MICHIGAN

Welding Equipment Is Most Valuable

(*Continued from page* 17)

the electric and gas-welding methods.

Two of the pictures which accompany this article were taken in our body building shop, and show two stages in the building of these bodies, in which a considerable amount of welding is done.

The picture at the head of this article shows ten of our newest type coaches, which we put into service the first of this year (1935). The bodies of these, also, were built in our own shops.

At this writing our fleet consists of 160 buses of the city-coach type, 6 trucks and 12 passenger cars.

●

Exhaust Gas Analyzer Most Valuable

(*Continued from page* 18)

ture of the work to be performed calls for the use of such facilities, it may be said that they "have done their part."

On the other hand, it is quite often noted, in some operations, that certain mechanics quite often practice so-called "short-cuts" in their work, thereby doing the job unskillfully and perhaps inefficiently. These practices have been known to result in damage or abuse to the shop equipment that was improperly applied, because such shop equipment was never intended for the work to which it is sometimes put.

In conclusion, good shop equipment, of adequate size and of the needed requirements for the job in hand, will more than pay its way, if purchased judiciously, properly used and provided there is sufficient work to keep it busy.

A five-thousand dollar cylinder grinding machine, on the other hand, might have no place in the medium-sized fleet, but to our way of thinking, a good exhaust gas analyzer, for instance, rightfully belongs there. And we have one, use it and consider it the most valuable piece of equipment in our shop.

●

Oil Reclaimer Is Most Valuable

(*Continued from page* 20)

we pay for oil. We are using a very good grade of oil, refined and marketed by one of the larger oil companies.

Our fleet is a comparatively small one, consisting of 22 trucks and 9 passenger cars. We do practically no repair work in our own shop, as this is farmed out to dealers, factory branches and independent service stations.

However, we do have some shop equipment. The oil reclaimer is one. Then there is our air compressor. The latter is used *not* for the purpose of inflating tires only, but for painting. We are doing our own vehicle refinishing and have a spray gun outfit for the purpose. We also have the usual oil tanks and pumps, gasoline tanks and pumps, etc. We do not have a car washing machine, but in the writer's opinion, we should have one. Our air compressor is also used for the meter shop and for cleaning fuel lines, tanks, etc.

I am also answering your second questionnaire on shop equipment and I would like to have you figure out costs of small and large repair shops, if possible, to see what the interest and depreciation costs on shop equipment amount to. I am getting my "story" in on the reclaimer, as I would like to see the results that this questionnaire brings.

Our Lathe Is Most Valuable

(*Continued from page* 22)

hubs, etc.; turning off teeth on flywheels, preparatory to shrinking on new gear; machining to finished size for new gear; making all sizes and types of bushings and shafts; cutting screw threads of all kinds; milling keyways in shafts; testing shafts for bend, and straightening them; sharpening reamers by grinding; truing up faces and stems of engine valves; using lathe as a power-drive for reamers; all kinds of drilling and cutting jobs; etc.

In short, the lathe is the ideal service tool, and as before mentioned, is the most valuable piece of shop equipment in our establishment, and our shop is considered fairly well equipped.

●

Welding Equipment Is Most Valuable

(*Continued from page* 24)

same source of heat. This method is much easier than taking a blacksmith's forge up so high to do the work, and there is also less danger of fire starting.

We also use the welding blowpipe to cut out old rivets and heat the new ones for hot-riveting; also to cut rusty and frozen bolts. It also comes in handy for soldering, welding extensions on drill bits, for lighting the blacksmith's forge, and we find lots more useful and profitable jobs for this valuable equipment, too numerous to mention here.

In conclusion, let me state that I believe that our oxygen-acetylene welding equipment is our most valuable piece of shop equipment for the simple reason that we can do so many different money-saving jobs with it. In fact we use it as much, or more than any other single piece of equipment in our shop.

It also saves us time and money, because welding is in many cases cheaper than buying new parts, and in a great number of cases much delay would be occasioned in getting the required new part. In short, it speeds up our maintenance work considerably.

We have a standard make of welding blowpipe, with 12-inch mixer and also a cutting attachment. We have used this outfit for about seven years and have had excellent service from it, with very little trouble or expense.

●

Diesel Progress in the Truck Industry

(*Continued from page* 30)

a 2½-ton truck, offered as a new unit, with a 260 cubic-inch, 6-cylinder automotive Diesel in it. This truck was driven into, and out of the exhibition hall, and the writer was present on both occasions.

We can therefore testify to the fact that said truck really did run (some even did not believe that); that it started easily; that was easily controlled; and that it neither smoked nor smelled. The latter is particularly important to bear in mind, because the truck was operated *indoors*, where there were no gentle "zephyrs" (not Lincolns) to rapidly carry away any smoke or smell that might have been forthcoming. Of course, it was somewhat noisier than a conventional gasoline engine of the same size—mostly compression and valve-operating mechanism noises, but it did *not* smoke or smell.

(*Please turn to page* 72)

NEW BEAR TIRE SPREADER

Take it anywhere—on the floor—on the curb—on the road-side—on a bench. A one man tool. For all sizes of tires. Simply roll tire onto spreader. Quickly adjusted to bead. Has an exclusive self-locking device. Takes only a jiffy to inspect any tire. Quick—easy—convenient—inexpensive. For all types of shops. Send coupon for prices and details.

NEW BEAR WHEEL BALANCER

The latest Bear engineering advancement in wheel balancing tools. New planetary pivot design insures absolutely accurate balancing. Wheel can be tested under actual road conditions. Easy to operate—helps merchandise alignment service—a real money maker. Send coupon for prices and details.

SEND COUPON TODAY

for complete information and prices on these new Bear Tools.

BEAR MFG. CO., ROCK ISLAND, ILL.

PLEASE FILL IN AND ATTACH TO LETTERHEAD

BEAR MFG. CO., Rock Island, Ill. F.O.-12

Gentlemen: Send me details on the following

☐ New Bear Tire Spreader
☐ New Bear Wheel Balancer

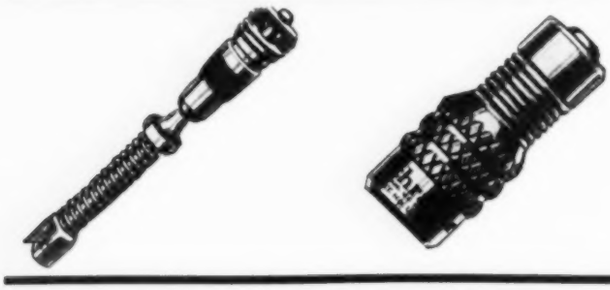
Name .....

Position .....

Ask Your Jobber for New Low Prices on Bear Shims and Lugs

GUARD AGAINST WINTER HAZARDS AND DELAYS

by protecting tires with these dependable Schrader products



SCHRADER VALVE CORE— standard of the tire industry, and the fastest-inflating, most rugged and most dependable valve core made.

SCHRADER "DUBLCHEK"— the valve cap that can't shake loose. Plier-attached—inflate right through cap. A guaranteed secondary air-seal that protects valve mechanism and reduces inflating time by one-half.

● Old Man Winter is a ruthless trouble-maker for fleet owners. He causes plenty of costly mishaps as a result of neglected tire inflation. He prolongs delays and upsets schedules by making tire-changing as difficult as possible.

NOW is the time to have your service-men go over every tire . . . put in fresh, dependable Schrader Valve Cores where necessary. Protect every core against dirt, ice, and moisture with Schrader Dublchek. Then every tire is so easy to inflate that there is no excuse whatever for anyone neglecting regular tire care.

Order these two standard tire saving products from your regular supplier.

A. SCHRADER'S SON, BROOKLYN, N. Y.

Division of
SCOVILL MANUFACTURING COMPANY
Incorporated

Schrader
REG. U. S. PAT. OFF.

TIRE-SAVING VALVES, CAPS, GAUGES and AIR-SERVICE EQUIPMENT

Diesel Progress in the Truck Industry

(*Continued from page* 71)

May we again repeat; we are not trying to "glorify" the Diesel engine. We are simply reporting all that we heard and saw. Had you been there, Sharlie, you would have seen and heard the same things. But we know you weren't, hence the appearance of this article.

One more point is worthy of mention. Because of the general characteristics of the Diesel engine, its power output is somewhat different than a gasoline engine, in that its torque curve is "flatter." In other words the maximum torque is developed at a relatively low r.p.m. and it remains constant over a somewhat longer period, and does not drop down so quickly at higher speeds. This greater torque development promises a certain percentage of reduction in gear shifting when carrying certain loads over certain grades.

One operator reported (through Mr. Kelley) that on a regular run from Akron to Boston, a distance of about 1,000 miles, he experiences a 26 per cent reduction in the number of gear shifts made. This one factor alone results in a material reduction in the total time of the run. It also results in lowering the fuel consumption, and since the cost of the fuel is considerably less than the cost of gasoline, he was able to indicate a very substantial saving. While talking about this run, it is interesting to note that at the end of each trip from Akron to Boston, approximately 1,000 miles, the crankcase oil is changed; however, no oil is added en route, according to Mr. Kelley.

We have just talked about the greater torque of the Diesel. However, undue advantage should not be taken of this factor. Mr. Kelley pointed out that in order to obtain the best performance from his particular Diesel engines, it is advisable to use the transmission so that the engine speed is never pulled down below 1,000 r.p.m., as "luggging" the engine at low speeds increases the bearing pressures and may cause unreasonable engine stresses.

A case was also pointed out where a Diesel engine salesman was overheard to tell an operator that his engine "will drive the truck up-hill as fast as on the level, regardless of the load carried; and that it will give an even mileage of 10 m.p.g. at all times regardless of gross loads or type of country travelled, and without regard to gear ratios." That these things are not possible, it goes without saying. This is only one of the many popular misconceptions of the Diesel engine that we are trying to correct.

The question of maintenance costs of gasoline engines versus Diesel engines was also brought up. While Mr. Kelley claimed that maintenance costs should be no greater with Diesel engines, some of the operators present who have had some experience with Diesels, took exception to that statement, going on record to state that they might be greater and if they were greater, it was safe to assume that they should not exceed gasoline engine maintenance costs by more than 15 to 25 per cent

Before concluding this article, let us call your attention to the pictures which appear at the bottom of pages 26 and 27, which are representative of Diesel-powered units operated by The Utah-California Motor Lines. On their regular run from Salt Lake City to San Francisco, Diesel power makes possible a saving of $1.25 per hour for every ton carried, we are told. Here is the story:

The long established freight line from San Francisco to Salt Lake City, operated by the Utah-California Motor Lines has substituted Diesel engines for gaso-

line engines, and reports a saving of four dollars a ton on fuel costs for the run. The scheduled time is thirty hours, but last April when comparative tests were made between gasoline-powered equipment and Diesel-powered trucks, it was found that the cost of operation with Diesel engines had been reduced to 75c per ton for the entire trip of 800 miles against the gasoline cost of $3.45 per ton. Not only had the cost of fuel been cut drastically, but the running time for the gasoline powered vehicles was greater, requiring 32 hours to complete this trip against the 30 hours running time made by the Diesel powered units, we are told.

Not every operation, of course, can show such economies but where the loads are heavy, the grades are long and steep, the distance is great, and the variations in operating conditions cover a wide range of temperature and altitude, Diesel engines can be relied upon to make a good showing.

In the run between San Francisco at sea level and Salt Lake City, two mountain ranges are crossed, the highest pass being 8,000 feet above sea level and at the time these tests were made, the temperature at this point was far below freezing. The start had been made only a few hours before, on a balmy spring morning. Descending from this pass, the road dips into a valley with little or no shade, and in the space of less than two hours, the temperature on the highway was hovering near 100 degrees. Under such operating conditions, every engine is at a disadvantage, but the characteristics of Diesel engines enable them to surmount these difficulties more easily than can their gasoline counterparts, it is claimed by Diesel exponents.

The load on this test run with the Diesel truck was 52,000 pounds gross, and the average fuel oil consumption was one gallon for every 3¾ miles. The gasoline powered units were limited to 48,000 pounds gross and, equipped with high compression engines, used Ethyl gasoline and obtained 2¼ miles per gallon.

Diesel development in the truck and bus industry is certain to increase very rapidly in the near future. Those responsible for this publication are carefully watching all developments, and it will be our aim to present such information in future issues, only on the basis of *facts*—and not with the idea of further "glorifying" a development that has already received a very generous share of glorification. But no one can afford to "laugh off" the subject of Diesel power, either, and just as fast as the Diesel develops into a real, useable source of power for general motor transportation, we'll be here to pass the dope on to you.

●

Detroit Brewery Keeps Check on Costs

(Continued from page 32)

greasing, etc.); depreciation; license and insurance; overhead; and revenue.

By thus having all necessary service operations recorded, and by maintaining a continual check on all these operations by means of the records, Mr. Doyle is able to keep his motor trucks in efficient operating condition at all times and also to hold his costs down to such low figures as previously indicated.

The Tivoli Brewing Company was formed in 1898 and completely reorganized in January, 1933. Recently the company built a modern eight-story brewhouse. Its total yearly capacity is 500,000 barrels. Howard H. Colby is chairman of the board, Elwood E. Bayne, president, and Fred R. Dolsen, vice-president and sales manager.

SAVE TIME & MONEY!

. . . WITH THE EXTRA GEAR RATIOS OF A WATSON AUXILIARY TRANSMISSION

Greatest Overall Economy

Fewer Engine Revolutions Per Mile

More Power for Pulling

Low Cost Light Weight

Pays for Itself Quickly

The Watson Transmission provides a 52% lower-low and a 23% higher-high—12 speeds forward and 3 reverse—all at instant command!

THE CROWBAR SHOWS THE GREAT VALUE OF A COMPOUND!

Gear ratio is identically the same as leverage. We use leverage when moving heavy objects with a crowbar. Exactly the same principle of leverage or ratio is used in a motor truck. We apply power through the leverage or ratio of the crowbar to move heavy or light objects without straining the workman. Likewise engine power is applied to the wheels through the leverage or ratios of the transmission. A heavy pull demands slow, powerful ratios. A light pull demands fast, less powerful ratios. With sufficient ratios the exact power required for every road or load can be applied to the wheels without straining or over-speeding the engine! The Watson Transmission provides 12 ratios, including a higher-high and a lower-low, so that the engine can be constantly operated without strain at its most efficient speed! The Watson Transmission hauls heavier loads in quickest time, with least wear-and-tear and with surprising savings in gasoline, oil and upkeep. Write for full details today!

For All 1 to 3 TON TRUCKS

Built by **BROWN-LIPE** *Exclusively for* **H. S. WATSON CO.**

WATSON COMPOUND TRANSMISSIONS

BROWN-LIPE BUILT

H. S. WATSON CO.
525 - 4th Street, San Francisco, Calif.

UTILITY Six Wheel Attachments are the most *Economical* for you to buy

Because they are built to certain definite principles; providing correct placement of the third axle for proper weight distribution; providing for drive wheel traction to increase with application of driving power; providing four point suspension to prevent undue strain on the frame; providing simplicity of construction and simplicity of installation.

Thru more than ten years that UTILITY third axles have been in production and service, these principles have never been changed except to refine and adapt the equipment to modern truck construction.

Utility distributors in all trucking centers all over the United States can demonstrate savings in truck operations with Utility Six Wheel Attachments.

Write for descriptive folder and name of distributor nearest you

Utility Trailer Mfg. Co.

Box 1407 Arcade Annex Los Angeles, Calif.

Motor Transportation Week in N. J.

DECLARING, among other things, that "motor transportation definitely has become a necessary adjunct to agricultural, industrial and commercial operations, as well as an integral part of our general transportation system," Governor Harold G. Hoffman of New Jersey designated as "Motor Transportation Week" the week of October 28th to November 2nd last. . . . This designation was co-incidental with the dates of the Newark Motor Truck Show, and it is interesting to observe the interest of the Governor of that state, in our industry.

•

New Bulletin on Colloidal Graphite

IN order to point out the fact that colloidal graphite will retard rather than promote corrosion, with particular reference to the new types of cadmium-silver and copper-lead bearing metals, a new bulletin has been issued by Acheson Colloids Corporation. . . . The bulletin gives some interesting data concerning these new bearing metals and tells of the chemical inertness of colloidal graphite. . . . For your free copy of this bulletin address Acheson Colloids Corporation, Port Huron, Mich., asking for a copy of R242. . . . Mention of FLEET OWNER always speeds up the service.

•

National Gasoline Consumption Up

GASOLINE consumption in the United States during the first six months of 1935 increased 3.95 per cent, or 305,942,000 gallons, over that for the first half of 1934, it is reported by the American Petroleum Institute. . . . The Institute's report is based upon the quantity of gasoline reported for tax or inspection in the various states, but reflects, as nearly as is possible to obtain the figures, consumption throughout the country.

•

Link-Belt Moves Executive Offices

THE executive offices of Link-Belt Company, for many years located at 910 S. Michigan Ave., Chicago, Ill., have been moved to the Bell Building, 307 N. Michigan Ave., where they will occupy the entire 23rd floor, and the north half of the 21st floor, a recent announcement states.

SELF-CLOSING MONKEY LINK

Pat. No. 1,438,560
Trade Mark Reg. in U. S. Pat. Office

***FREE* Samples To Fleet Owners**

Self-Closing Monkey Links

Write us for free samples, state how many trucks there are in your fleet and what size they are. We will mail samples immediately.

Why Buy New Chains? Repair With Monkey Links

Your chains aren't worn out when the cross links start to let go. Repair with Monkey Links. Your drivers can do it on the road. No tools required. No appreciable time lost. Chains as good as new. Save money. Increase safety. Send for your FREE SAMPLE now.

Flower City Specialty Co.
ROCHESTER, NEW YORK
At All Reputable Jobbers

The BIG LIFT

Here's tremendous power, wide range easy operation—in a full line of hydraulic jacks, hand and floor types, from 1 to 75-ton capacities. For floor, curb, road, and shop use — Buy Blackhawk. Ask your Jobber Salesman. Write us for literature.

Blackhawk Mfg. Co.
Dept. F. O. 12 Milwaukee

BLACKHAWK HYDRAULIC JACKS

How 85 Fleets Maintain Front-Ends

(*Continued from page* 38)

tors (and manufacturers) who read this article will wonder just how *representative* this "survey" really is, what types of fleet operators participated in it, in what parts of the country they are located, and about how many vehicles each of them operate. So here is a breakdown of the 85 operators who participated in this survey:

There were 10 trucking companies; 7 dairies; 7 public utilities; 6 meat packers; 6 bus operators; 6 petroleum companies; 5 grocers; 5 taxicab companies; 5 bakeries; 4 municipalities; 4 manufacturers; 3 department stores; 3 laundries; 3 telephone companies; 2 contractors; 2 county highway departments; 1 bottling company; 1 brewery; 1 ice-and-coal company; and 4 miscellaneous fleets.

Fleet operators from 29 states in the Union participated, including some from as far West as California, Oregon and Washington; as far North as North Dakota; as far South as Florida and Texas; and as far East and North as Maine. So you see, gentlemen, this information is *quite* representative.

"Were they small fleets or large ones?" someone is bound to ask. The answer is that they were *all sizes* of fleets. Some had fifteen, and some had several hundred vehicles. In fact, the *average* number of vehicles per participating fleet is about 123. The vehicles themselves are distributed as follows: 6,451 trucks and tractors, 1,000 trailers, 2,322 passenger cars, 234 buses, and 458 miscellaneous vehicles. Adding them all together, the grand total is 10,465 vehicles.

As stated previously, we have made a typewritten tabulation of this survey, for easy reference. Copies have already been furnished to those operators who participated in it. We have a few more on hand, which we will be glad to furnish, gratis, to any interested fleet operators, even though, technically, they are not entitled to it. However, since one can "catch more flies with honey than with vinegar," we are waiving our rule in this instance, the thought in mind being that perhaps after an operator once *sees* what he will get, in return for a few minutes' work each month, he will feel more like participating in a very worthy cause.

On page 65 of this issue, there is a questionnaire on a *new* subject. A new subject is "surveyed" each month. This work is done primarily for the fleet operator's benefit, and if *more* operators would participate, it would please us greatly. All you have to do is turn to that page, fill out the blank, and mail it in to the Editor, who happens to be Yours Truly. If you cannot answer all of the questions, just answer those you can, and leave the rest blank.

In return for your efforts, we will send you a tabulated, typewritten resumé of all the answers. Many operators have told us that they save these tabulations, filing them directly under the subject discussed, where they will be handy for future reference. This month the questionnaire covers "Windshield Wipers." It's on page 65, gentlemen. We'd appreciate your cooperation. The more, the merrier; and the more *representative!*

No more. No less. You get *true* mileage records by equipping your trucks with Veeder-Root HubOdometers. For these simple recording instruments are easily adjusted to agree with all changes in wheel and tire dimensions *to a tenth of an inch.* They clock up every mile a truck goes, forward and backward . . . give the real accuracy that mileage records must have in order to be useful for making savings on gasoline, oil, tires and repairs.

Veeder-Root HubOdometers are strongly constructed. . . . built for the hardest service. *They stand up.* Dust and dirt cannot get inside to cause damage and unnecessary repairs. Tampering is easily detected.

Veeder-Root HubOdometers are bringing accurate records and lower operating costs to many fleet owners. Write for complete information.

VEEDER-ROOT Inc.
HARTFORD, CONN., U. S. A.

CLEAN EQUIPMENT
PAYS and PAYS and PAYS You
BIGGER PROFITS

Every operator knows this! And the BEAURLINE FOUNTAIN BRUSH makes clean equipment pay still more. Reduces time and labor cost of cleaning equipment by one-third. Combines brush and water action. Soft, tough brush bristles loosen dirt, water fountain flushes it off. Preserves finish.

Easy to use. You slide water hose on end of rigid hollow 4-foot brush handle. Can also be furnished with 6-foot handle at 40¢ extra. Thick mop of soft, tough 4" bristles woven into cast aluminum head with scratch-proof rubber gasket and guard, provides gushing fountain. Brush unit refills at low cost when worn out. Adopted by many large operators for efficiency and economy.

Beaurline Fountain Brush Co.

SAMPLE →
List price $9.00. 20% discount to Fleet Owners. Send COUPON now for trial brush, $7.20.

BEAURLINE FOUNTAIN BRUSH CO.
60 E. Roosevelt Rd., Chicago, Ill.
Enclosed find $7.20 for which please send me one of your Fountain Brushes and complete price quotations.
Name .....
Address .....
City ..... State .....

DROWSY driving is dangerous. But don't blame the driver. Manual brakes cause strain and fatigue. Big loads are hard to handle. Equip NOW, with—

LATHAN
BESLER

★ Engineered

POWER BRAKES

WHEN a truck crashes or goes into the ditch, there is generally a drowsy driver at the wheel. Insurance cannot restore human life, salvage business lost to competitors during interrupted service, or recompense for time lost in damage disputes and law suits. Why take chances, when LATHAN-BESLER Power Brakes cost so little, entail NO POWER COST, and require NO MAINTENANCE. Nation-wide sales and service. Write TODAY for LATHAN-BESLER Catalog.

LATHAN - BESLER Power Brakes for every truck and trailer. Package outfits as low as $25 LIST

New LATHAN-BESLER catalog now out. Write for a copy TODAY!

LATHAN SINCE 1911

A LATHAN product

LATHAN CO., Inc.

SAN FRANCISCO - Polk and Pine Sts. DETROIT - 477 Selden Ave.

N.S.P.A. Gets 22 New Members

THE election of twenty-two new members to the N.S.P.A. was recently announced. Sixteen of the new members are jobbers; four are manufacturers; and two are Canadian associate jobbers. . . . Together with 18 new members elected during September, the Association boasts a total of forty new names on its roster during the past two months.

•

Motor Valve-Bellevue Merger

A MERGER has recently been effected between Motor Valve Products Co., Ravenna, Ohio, and The Bellevue Mfg. Co., Bellevue, Ohio. . . . The former manufactures a complete line of poppet valves for automobiles, trucks, tractors and Diesel engines. . . . The latter makes stampings and automobile accessories. . . . Removal of the Motor Valve plant to Bellevue has recently been effected, and all operations will hereafter be carried on from that point.

•

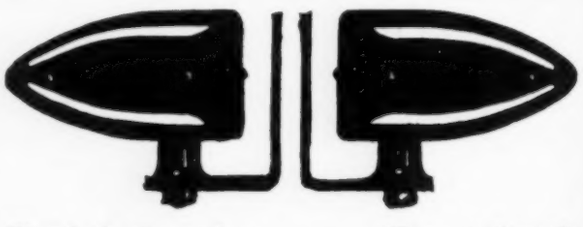
Stradley Joints Binks Mfg. Co.

APPOINTMENT of E. S. Stradley of Detroit, is announced, as general office engineer for Binks Manufacturing Co., 3114 Carroll Ave., Chicago, makers of spray-finishing equipment. . . . His efforts will be devoted to the promotion, installation and supervision of paint line circulating systems.

•

J-M, Gilmer Combine on Auto Products

THE Johns-Manville Sales Corporation, New York, and the L. H. Gilmer Company, Philadelphia, announce the formation of a partnership arrangement whereby the Johns-Manville Sales Corporation becomes sole sales agents for the United States and Canada, for Gilmer fan belts and radiator hose, effective immediately. . . . This arrangement relates only to Gilmer automotive products. Under this team plan the identity of the Gilmer line is retained, but the name will be linked with the J-M seal to unify Gilmer fan belts and radiator hose with J-M automotive products, headlined by brake lining and clutch facings. . . . The manufacture of Gilmer products remains unchanged.



Simple in Operation Easy to Install
Reasonable Prices

Approved by Penn., Conn. and other states

TURNSIGNAL
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400 East Rittenhouse St., (Germantown) Philadelphia, Pa.

ARMORPLY
A SUPERIOR METAL FACED PLYWOOD PANEL FOR BODY CONSTRUCTION

Write for samples and prices

UNITED STATES PLYWOOD CO. INC.
603 W. 36th. ST. NEW YORK CITY

"I'm hard-headed about Brake Maintenance Costs!"

Fleet maintenance is no hit or miss job with me. I make it my business to know to the fractional penny what everything costs—from gas and oil right through to brake relining.

SCANDINAVIA has proved its worth over and over. It combines safety with long wear. My drivers like it because it is smooth, squeak-proof and gives them POSITIVE POWER TO STOP. I like SCANDINAVIA because it has reduced my brake maintenance costs to a minimum. Naturally I am sticking with SCANDINAVIA in 1936. Wouldn't I be foolish to change?

WRITE TO US ABOUT YOUR BRAKE PROBLEMS

SCANDINAVIA

DIE PRESSED and MOLDED BRAKE LININGS and BRAKE BLOCKS

SCANDINAVIA BELTING COMPANY

248-250 Central Avenue, Newark, N. J.

BOSTON PITTSBURGH CLEVELAND CHARLOTTE, N. C. LOS ANGELES SAN FRANCISCO

Trucks Pay More Than Half of Gas Tax

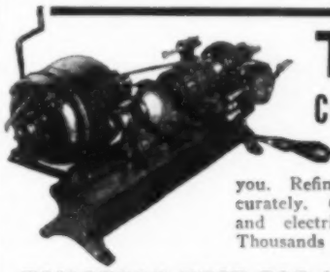
MORE than one-half the tax bill paid annually by motor trucks is in the form of state taxes on gasoline, it is revealed in "Motor Truck Facts," published by the Automobile Manufacturers Association for 1935. State gasoline taxes in 1934 cost truck operators an estimated $154,170,000, as compared with $71,852,000 for registration fees, and a total tax bill of $308,828,000. Truck operators also paid substantial federal gasoline taxes.

The book indicates that truck operators of New York State pay the largest state gasoline tax bill, estimated at $14,322,192 for 1934. Texas truck operators paid $13,576,560, while Pennsylvania's operators paid $10,320,768. It further is revealed that farmers use 26.6 per cent of all motor trucks. The farmer consequently pays about one-fourth of the motor truck gasoline tax bill just as he pays a quarter of the passenger car gasoline taxes.

More than 80 per cent of trucks are of one and one-half tons, or less, capacity. The average load of interstate trucks is slightly more than two tons. More than 25,000 trucks are used in railroad freight service.

Garage Foreman Available (Adv.)

EXPERIENCED operator would like to make a connection with some fleet owner as garage foreman or mechanic. Have had six years' experience on dump trucks in excavating and road construction work. Can supervise equipment on job. Will go anywhere. American, age 32. Have complete tool set. . . . Address A. S., c/o Editor, FLEET OWNER, 90 West St., New York, N. Y.



TRUCUT

COMMUTATOR REFINISHER

Here is the machine that pays for itself in the extra profits it brings you. Refinishes and undercuts commutators accurately. Complete with two centering chucks and electric undercutter — no extras to buy. Thousands of satisfied users — it's guaranteed.

TAILSTOCK REST FOR LATHES

The TRUCUT holds centerless armatures steady without holders or bushings. Positively eliminates inaccurate centers. ¼ to 1 inch capacity. Furnished with shank to fit any lathe, and supplied with guard to keep out chips.

Write for complete information and prices.

FRANK N. WOOD CO., 316 Caswell Block, Milwaukee, Wis.

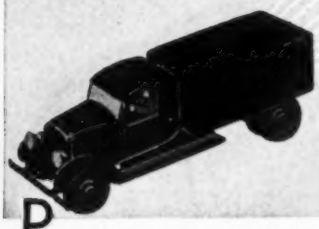
VELLUMOID

A QUALITY PRODUCT

Be sure you get VELLUMOID Sheet Packing and Gaskets, and not a substitute.

THE VELLUMOID CO., WORCESTER, MASS.

How many STRINGS to a TRUCK?



or WHY does a truck stand still?

PEOPLE used to think it was the driver—when they thought at all. Now they figure differently. And they are discovering a lot of interesting things. Among them this:

Most of the idle time of a truck is due to other factors than the driver.

Perhaps they make a little change in the order department, or some trifling change in office routine, and as a result several expensive trucks increase their running time an hour a day! . . . What *starts* them doing this? . . . When they find out *when* the delays occur, and for *how long*, then they *can't help* going after the *cause*. . . . The *Servis Recorder* automatically shows up all delays on a graphic chart—like pointing a finger at them.

Today more than 100,000 *Servis Recorders* are looking after more than 100,000 trucks, and *those* trucks are keeping busy. . . . Have you investigated it yet?

THE SERVIS RECORDER
"Keeps Trucks Busy"

Write for Bulletin!—Ten Ways of Getting More Work Out of Motor Trucks

The Service Recorder Company
1422 Euclid Ave., Cleveland, O.

Federal Gets War Dept. Orders

ANNOUNCEMENT of the award by the War Department of an order for 74 trucks, cabs and bodies to the Federal Motor Truck Company, Detroit, Mich., was made last month by M. L. Pulcher, president of Federal. . . . Sixty-six of the trucks will be equipped with enclosed drivers' cabs, 9-foot dump bodies and hydraulic hoists. . . . The remainder will also have enclosed cabs, but will be equipped with army cargo type bodies, fitted with tarpaulin tops and troop seats. Tire equipment will be single front and dual rear.

•

G. E. Sales Reach New Levels

SALES billed by the General Electric Company during the first nine months of 1935 amounted to $149,173,275.12, compared with $121,735,122.98 during the corresponding period of last year. This is an increase of 23 per cent, President Gerard Swope announced. . . . Orders received during the first nine months of 1935 amounted to $158,943,765, compared with $132,613,543 for the nine months last year, an increase of 20 per cent.

•

B.N.-Ohio Sales Arrangement

THE combined sales arrangement which has existed between Burgess-Norton and Dall is discontinued, due to the sale of Dall to Aluminum Industries. . . . Hereafter, Burgess-Norton and the Ohio Piston Company will combine their sales and warehousing activities, in a similar arrangement to the former B-N and Dall combination. . . . This news announcement comes from C. M. Burgess, president of the Burgess-Norton Manufacturing Company.

•

J. W. Dunlop Joins Amco

APPOINTMENT to the staff of the Asbestos Manufacturing Company, of James D. Dunlop, well known as a practical brake service engineer, is announced. . . . Mr. Dunlop will make his headquarters at the factory, Huntington, Ind. Recently he has been associated with L. J. Miley Company, of Chicago, and prior to that he has had a wide experience in the automotive field.

The Alexander Milburn Company

Paint Spray Equipment,
Standardized Cutting and
Welding Apparatus and
Portable Carbide Lamps

Write for catalog

1411 W. Baltimore St., Baltimore, Md

KEEP SLUDGE Out of Motor with FILTERITE

THE IMPROVED OIL FILTER

Filterite uses slow filtration process. **Positively removes water from crankcase,** preventing sludge formation. Keeps oil 99.98% clean. One model fits all motors. Low in cost. Inexpensive cartridge changed by removing **only one bolt.** Used by national fleets.

Write for complete information, prices, discounts. Some territory still open for distributors.

REGA MANUFACTURING CO., 79 Mt. Hope Ave., Rochester, N. Y.

1935 Truck Output is Second Largest

(*Continued from page 49*)

postponed until December 1st. These provisions deal with filing of tariffs and regulation of rates of common carriers, filing of schedules of contract carriers and receipts or bills of lading.

In addition to common and contract carrier control, the Commission is given authority to prescribe regulations on the qualifications and hours of service of drivers, equipment standards and safe operation of shippers' trucks engaged in interstate commerce provided, if after investigation, the Commission finds such regulation necessary. If such regulation is made effective, private carriers are subject to other provisions of the Act including those which give the Commission the right to inspect property, records, accounts and correspondence.

The Act is regarded by many of its proponents as a means of turning traffic from the highways to railroads. There is little likelihood that this will come to pass since the policy laid down in the Act is to promote the development of motor truck transportation and to improve the relationship between motor carriers and other transportation agencies. State regulation along the lines of the Federal Act has been in effect in more than forty states from some time but has not resulted in any serious diversion of traffic from motor carriers.

Because of the immense amount of preliminary work that the new Motor Carrier Bureau will have to accomplish before it is ready to receive tariffs, conduct hearings, handle complaints or assume other administrative powers, students of transportation consider it unlikely that the full effect of the law will be known for some time.

The makers and users of motor trucks, as well as the general public, are vitally concerned that motor truck service be maintained in as safe a manner as possible. It is hoped that any regulation issued by the Commission governing drivers' hours of labor and equipment will promote greater safety in intrastate, as well as interstate operation.

General adoption of a uniform set of state laws similar to the one recommended by the American Association of State Highway Officials for sizes, weights and speeds of motor vehicles should not only increase safety and assist enforcement officers in their work but should also create a more friendly feeling between motor truck operators and other highway users.

●

Six Carriers Win Awards in Safety Contest

SIX commercial trucking concerns were declared winners in the National Highway Safety Contest conducted by the American Trucking Associations, Inc., according to an announcement by J. F. Winchester, chairman of its National Safety Committee. The contest was based on operations on the highway covering a twelve month period ended August 1, 1935.

Included among the winners were two one-truck operators, Larson Transportation Company, Granite Falls, Minn., and C. D. Wendell, Winchester, Va. The successful fleet-operator contestants were Patrick Transfer & Storage Co., Houston, Texas; C. E. Hall & Sons, Inc., Somerville, Mass.; J. J. Willis, Odessa, Texas; and Galveston Truck Lines, Oklahoma City, Okla. The Awards, bronze plaques, were presented to the carriers at the second annual convention of the American Trucking Associations, Inc., in Chicago, October 14.

At the same time, a silver cup was presented to the Indiana Motor Traffic Association for its work during the last year in the interest of highway safety. The Indiana association competed with similar organizations from all parts of the country in this contest. The cup will be contested for from year to year and will remain the permanent possession of the association winning it three times.

Special honorable mention was awarded the sales op-

"On Time" Schedules must be maintained or serious loss will result!

KEEP FLEETS MOVING with Good Roads CHAMPION SNOW PLOWS

They are saving many owners heavy loss caused by delayed equipment — why not investigate — it will pay you!

GOOD ROADS MACHY. CORP.
KENNETT SQUARE PENNSYLVANIA
"Oldest and largest builders of Truck operated Snow Plows in the World."
ASK FOR SNOW PLOW CATALOG NO. 100

Easy as A B C...

It's no trick to get fast, trouble-free refinishing with Revolite Masking Tapes. They give razor-sharp color separation in all sorts of weather...adhere instantly...pull off clean. For greater beauty in refinishing, at lower cost, follow the lead of fleet owners everywhere... specify Revolite.

PERMACEL
The perfected paper tape that is steadily winning new friends because of its flexibility, dependable adhesion, and clean, sharp edge. Impervious to weather and all lacquer solvents... eliminates bothersome touch-up.

JONFLEX
For years the *standard* in fine-woven cloth tapes...in ease of handling and accuracy of results, just like Permacel.

INDUSTRIAL
Differs from Jonflex only in the heavier, coarser, tougher weave of its cloth backing.

THE REVOLITE CORP.
A Subsidiary of Johnson & Johnson
NEW BRUNSWICK NEW JERSEY

THE REVOLITE CORP.
New Brunswick, N. J.
Without cost or obligation, send me a USEABLE sample of Permacel. All Revolite Tapes come in sizes ½" to 36" wide in 60-yard rolls.

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TOWN AND STATE
JOBBER

In FLORIDA
. . . and En Route

Colonial Hotels in Miami—the Miami Colonial, S. Franklin Pierce, Manager; Colonial Towers, C. A. Wampler, Manager; and the Venetian. In Miami Beach—the William Penn, J. A. Saeger, Manager. In Orlando—the Colonial Orange Court, William C. Atkinson, Manager. In Key West—the Key West Colonial, Jackson S. Golden, Manager. In Charleston, S. C.—the Fort Sumter, John S. Cator, Manager.

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eration subsidiaries of the Standard Oil Company of New Jersey, which had entered 1959 vehicles, travelling more than 25,000,000 miles, in the contest. Honorable mention was awarded to Guerin Special Motor Freight Line, Inc., Philadelphia, and Hugh Breeding Transport Company, Oklahoma City, Okla.

The judges in the contest, in which more than 25,000 vehicles were entered, were: John E. Long, president, National Safety Council; Capt. S. St. J. Wilson, Bureau of Public Roads; Col. A. B. Barber, Chamber of Commerce of the U. S.; R. P. Blake, Department of Labor; and P. J. Stupka, American Automobile Association.

The truck association's safety committee announced the establishment of an Educational Safety Research Fund to further its activities in connection with highway safety. The monies collected by the fund will be used to finance the nation-wide safety campaign, reaching into every county in every state in the union. In this work, the trucking association, Mr. Winchester explained, will cooperate with the Interstate Commerce Commission, authorized to set up rules for safety for interstate carriers; the National Safety Council; the United States Bureau of Public Roads, and other national organizations interested in eliminating highway hazards and reducing highway accidents.

In addition to Mr. Winchester, the national committee consists of: P. F. Arnold, Providence, R. I.; F. O. Nelson, Jr., New York City; W. F. Banks, Brooklyn, N. Y.; William Clark, Phila., Pa.; R. K. Carter, Richmond, Va.; A. G. Boone, Atlanta, Ga.; S. J. Drummond, Ensley, Ala.; N. F. Schilling, Memphis, Tenn.; Jack Morgan, Austin, Ind.; John Vander Jagt, Grand Rapids, Mich.; S. J. Cashel, St. Louis, Mo.; B. H. Clanton, Oklahoma City, Okla.; Paul Bellamy, Rapid City, S. D.; C. R. High, Boise, Idaho; M. F. Jones, Longmont, Colo.; and H. M. Lang, Los Angeles, California.

●

IS It a Free Country? (An Editorial)

THE proof of motor transport regulation is in the hauling—or, rather, in the effort to haul. Many persons have learned that to personal discomfort and financial sorrow, since states began to enact multitudes of complex and conflicting laws applying to highway transportation.

Now comes a story—a story which seems fantastic but is really true—that shows it is almost impossible and certainly very impracticable to try to haul a load of household goods across country for hire. This recital of facts also reveals the statement that "highway transportation is unregulated" as being hollow and misleading.

Recently a man in Texas wanted to ship his household goods to a West Virginia town by truck. He made arrangements with a truck operator to do the hauling. The truck operator, who was hired to begin the trip on August 15, wrote a letter on August 8 to his state association, asking for details of regulatory provisions in states to be traversed.

Two days later the truck operator received a reply to his letter. A careful study of the various state laws, his association told him, showed he could not make the trip by the southern route because approximately ten miles of the route was in the State of Kentucky, where overall length of truck and trailer is limited to 30 feet, two feet less than the overall length of the trucker's equipment.

No physical limitations, however, would preclude use of his equipment if he made the trip by the northern route, through Oklahoma, Missouri, Illinois, Indiana,

Ohio and into West Virginia, he was told. To take the truckload of household goods through those states, though, he would have had to spend at least $1,000 in attorney's fees, traveling expenses and taxes, and would have had to devote six weeks of time to the task of complying with the laws of those states, he also was advised.

This owner of a for hire truck, trying to make a few honest dollars by serving a man who was willing and anxious to pay him for his services, found he would have to file tariffs, financial statements, and applications in seemingly endless numbers. He also learned he would have to pay a wide range of taxes in various states, which he might never again enter after having finished this one job of hauling. Also, he discovered he would have to paint lettering on the side of his truck —lettering of a special type—to comply with the rules of one state and in the next state he would have to do some more painting to display another brand of information about his operations to the public.

Finally, he learned that he could buy a new passenger car and make the trip from Texas to West Virginia and return as a pleasure journey for less money than it would cost him hauling a load of household goods to meet the various state requirements for for hire over a course forming one-half of that round trip.

The letter received by the trucker from his state association closes with the following paragraph:

"Our apparent lightness in parts of this letter is caused by a detailed study of this example of 'unregulated competition', which would be very funny were it not so symbolic of the difficulty of engaging in the legitimate business of rendering a transportation service."

Federal regulation is a factor which has yet to be applied to situations such as this, and its effect upon them cannot accurately be gauged in advance.

The Texas trucker's experience shows the restrictions which are placed upon the flow of commerce and industry over a public highway system that would not exist in its present form without the development and broad use of automotive vehicles.—*An Editorial in Highway Highlights.*

●

Motors Boil Out When Everything is O. K.?

By J. D. Zerbo, Cost Acct.,
Strietmann Biscuit Co., Cincinnati, Ohio

TWICE per year we drain and flush our radiators, using pressure and solvents. When ordinary flushing methods won't work, we take the radiators off and send them out to a radiator shop to be cleaned.

We are troubled very little with foreign deposits due to the water in our locality; we use a rust preventer, which really is an inhibitor. When vehicles are on the road, they are allowed to pick up water only in emergencies. We do not carry extra water.

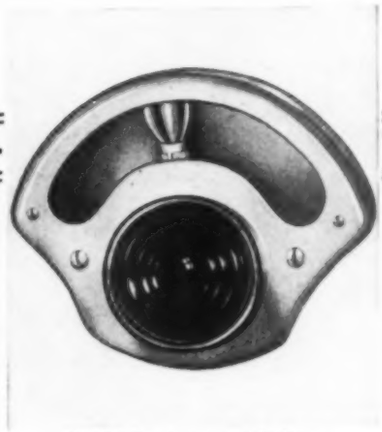
Where motors have aluminum heads, we use just pressure and no solvents. We have not experienced any trouble in cleaning such cooling systems.

Periodic attention to cooling systems, in our opinion, pays big dividends in effecting definite maintenance savings. Our commonest trouble is the water pumps on two types of truck motors. These motors seem to boil out a great quantity of water, even when everything is in A-1 condition. . . . We operate a fleet of 33 trucks.

DUAL Safety STOP-LITE

WIG-

Combination Tail Light and Stop Light



WAG

The Stop-Lite That Speaks With Action

For Trucks, Buses and Trailers

U. S. Patent Nos. 1976543—1675070—Other patents pending.

For Passenger Cars, Trucks, Buses and Trailers

A signal with action which compels attention and greatly lessens the danger of rear end collisions. Tail light of standard type with a strong penetrating stationary red light; stop light operates whenever brakes are applied, bringing into view a red light which wig-wags from side to side, visible from both sides and rear.

Read the experience of MARKEL SRVICE:

"September 3, 1935

"Safety Signal Devices, Inc.,
5031 Broadway Ave.,
Chicago, Illinois.

Gentlemen:

After giving your Dual Stop-Lite a complete tryout for the last 12,000 miles, and speaking as a safety engineer we recommend the use of this light in eliminating rear end collisions on the highway. The moving signal wig-wagging calls attention to equipment following, in such manner that it serves its purpose in a far better manner than the ordinary stop light.

The practicability of the Dual Safety Stop-Lite is outstanding; it is easily and quickly installed without any special tools or rearrangement of wiring and the increased safety value of such a light on an automobile or truck is obvious as the moving red light is many times more visible than a stationary one.

We have found this light is visible from both sides as well as the rear which is an added recommendation for this type of warning. We recommend its use for passenger cars, trucks, buses, toward the elimination of rear end collisions.

Yours very truly,

(Signed) MARKEL SERVICE, INC.,
C. C. Rosenbarger, Division Manager."

For Passenger Cars

SAFETY SIGNAL DEVICES, INC.

5031 North Broadway **Chicago, Illinois**

You can clean out automobile radiators for 6c each

•

SEND FOR FREE SAMPLE OF Sani-Flush

Sani-Flush is the ideal radiator cleaner for fleet owners. It does its job quickly and thoroughly for *minimum cost*. It is perfectly harmless and safe. It is not caustic. Cannot damage aluminum cylinder heads, water jackets, radiator or hose connections.

Pour a little Sani-Flush in the radiator. Run the engine. Drain, flush and refill with anti-freeze. That's all!

Send, on your firm stationery, for a generous free sample of Sani-Flush. Write today.

THE HYGIENIC PRODUCTS CO., CANTON, OHIO

Cut 80% off your battery charging costs!

SAVE WITH THE NEW

ADD-A-CHARGER

Costs but $12.75 to buy. Costs less to operate . . . less to maintain. Makes real savings in both small and large shops. GET THE FACTS.

Write today for literature

THE AUTOMATIC ELECTRICAL DEVICES CO.
329 EAST THIRD ST., CINCINNATI, OHIO

FINEST CONSTRUCTED MODERN BODIES

THE GERSTENSLAGER CO. - - - Wooster, Ohio

75 YEARS OF BUILDING JUST GOOD BODIES — NOTHING ELSE

Write for list of satisfied owners

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Here's a keen dependable tool for whittling maintenance costs—**use nothing but original equipment parts.** ▼ Shrewd buying of service parts—recognizing how to save a good deal of money by spending a little more—is saving countless dollars for several leading truck operators; a buying policy which insists on "original equipment parts." ▼ That policy will pay you—in lowered costs, increased profits.

THE TIMKEN-DETROIT AXLE COMPANY

DETROIT MICHIGAN

New METRO series; built in 2 sizes:
Ace, 1½-2 Ton and Boss, 2-3 Ton

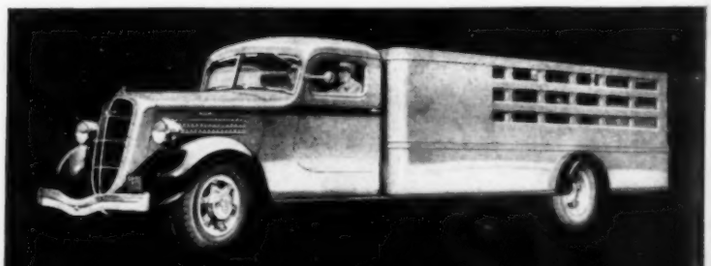
A 1936 Studebaker *to handle your job better!*

$565 and up, at the factory, chassis only

Above: New METRO Bus, on Boss double-drop frame chassis—13,500 lbs. gross. (New STANDARD Bus is built on Ace double-drop frame chassis—11,000 lbs. gross.)

Right: New STANDARD series; in 4 sizes: Ace, $1\frac{1}{2}$-2 Ton; Boss, 2-3 Ton; Mogul, $2\frac{1}{2}$-$3\frac{1}{2}$ Ton; Chief, 3-4 Ton.

FOR virtually every trucking need, Studebaker for 1936 provides the right vehicle at the right price. Two great series—6 distinct truck models—two brilliant new bus chassis! The sensational new Metro (cab-forward) series not only meets big city requirements perfectly, but, with its shorter turning ability, offers enormous advantages in road construction work, narrow roads, mountain roads and where room is at a premium. The smart new Standard series carries Studebaker's famous rugged reliability and economy to a new high mark. Studebaker dealers will presently have these brilliant new 1936 Studebakers. See them! Measure them against other trucks on any—every—point!



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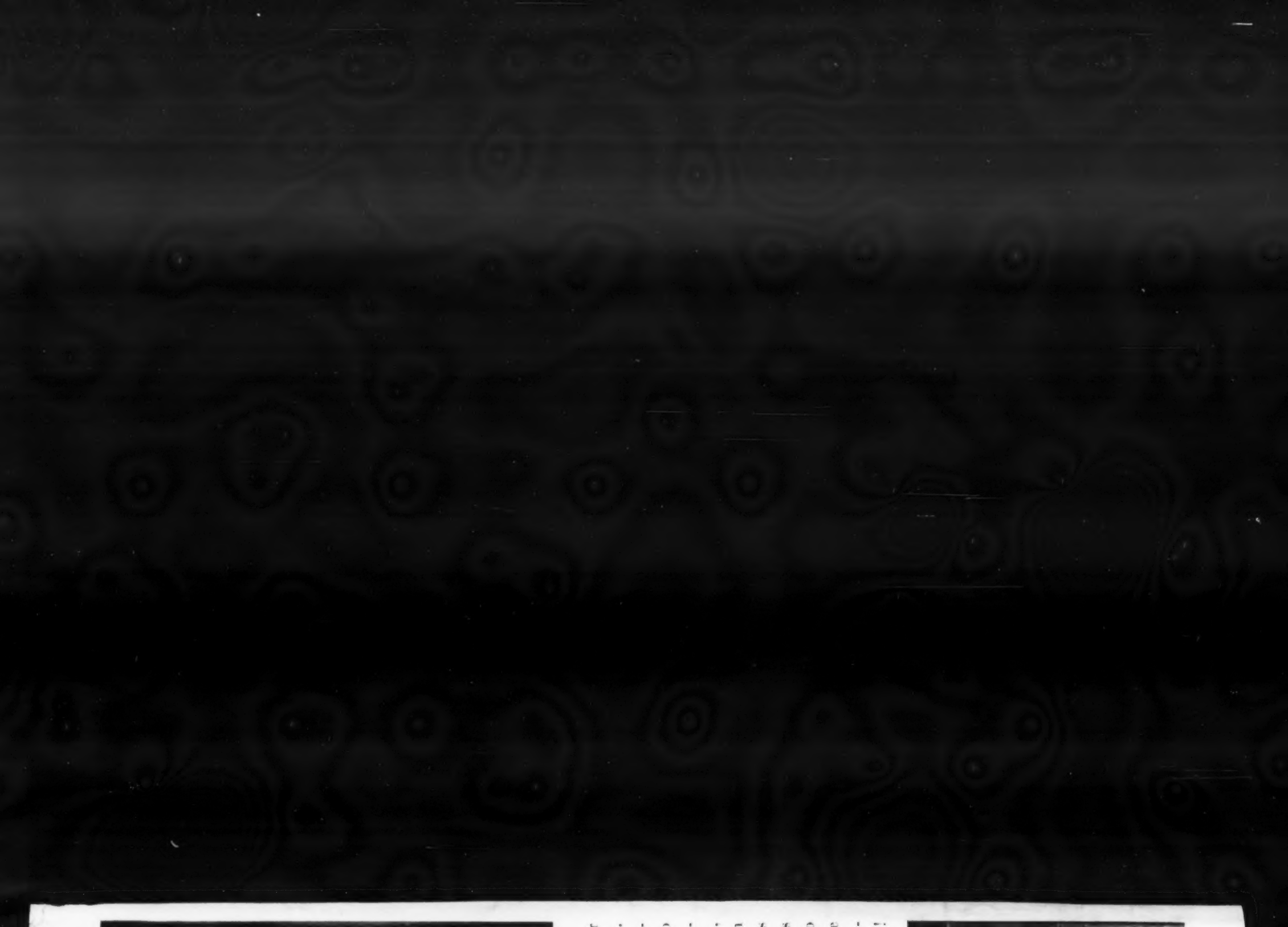
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